

9 NEW TOOLS ● 7 WORKSHOP TIPS ● 4 WET GRINDERS TESTED

American Woodworker



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#139, DECEMBER/JANUARY 2009

Mission Oak Dining Table

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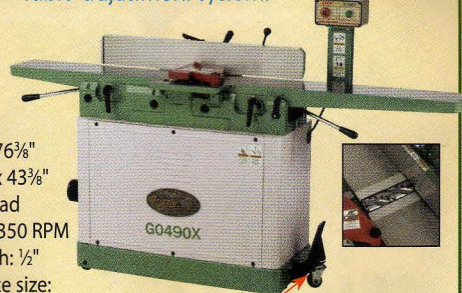
8" JOINTER w/SPIRAL CUTTERHEAD!

Versatile parallelogram table adjustment system!

MADE IN ISO 9001 FACTORY!

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G0490X \$1075⁰⁰ SALE \$1050⁰⁰

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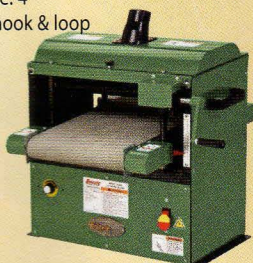
12" BABY DRUM SANDER

- Sanding motor: 1 1/2 HP, 110V, single-phase
- Conveyor motor: 1/2 HP, 110V, single-phase, variable speed 0-15 FPM
- Drum surface speed: 2300 FPM
- Max. stock dimensions: 12" wide x 3 1/2" thick
- Min. stock length: 8"
- Sanding drum size: 4"
- Sanding belt: 3" hook & loop
- Approx. shipping weight: 160 lbs.

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2 ADJUSTABLE PRESSURE ROLLERS & INDUSTRIAL-DUTY BELT



G0459 \$650⁰⁰ SALE \$525⁰⁰

\$69⁹⁹
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17" HEAVY-DUTY BANDSAW

- Motor: 2 HP, 110V/220V, single-phase, TEFC
- Precision ground cast iron table size: 17" sq.
- Table tilt: 10° L, 45° R
- Max. cutting height: 12"
- 2 blade speeds: 1700 & 3500 FPM
- Blade size: 13 1/2" L (1/2"-1"W)
- Euro-style roller disc blade guides
- Approx. shipping weight: 342 lbs.



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G0513 \$825⁰⁰ ONLY \$750⁰⁰

\$89⁹⁹
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12" X 83 1/2" PARALLELOGRAM JOINTER

- Motor: 3 HP, 220V, single-phase
- Precision ground cast iron table size: 12 3/4" x 83 1/2"
- Cutterhead knives: (4) 12" x 1/8" 1 1/4"
- Cutterhead dia.: 3 3/4"
- Cutterhead speed: 4950 RPM
- Max. depth of cut: 1/8"
- Max. rabbeting capacity: 3/4"
- Approx. shipping wt: 1059 lbs.

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G0609 \$1595⁰⁰ SALE \$1550⁰⁰

\$250⁰⁰
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- Motor: 3 HP, 220V, single-phase
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- Cutterhead speed: 5000 RPM
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- Approx. shipping weight: 675 lbs.

New!



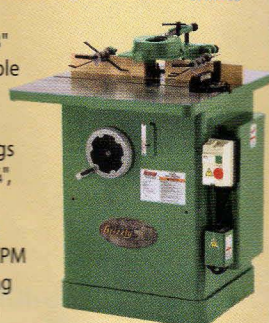
G0453Z ONLY \$1295⁰⁰

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3 HP SHAPER

- Motor: 3 HP, 220V, single-phase, w/reversing switch
- Precision ground cast iron table
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- Spindle speeds: 7000 & 10,000 RPM
- Approx. shipping weight: 357 lbs.

INCLUDES MITER GAUGE & FENCE W/ HOLD-DOWN SPRINGS



G1026 \$895⁰⁰ SALE \$875⁰⁰

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- Suction capacity: 1354 CFM @ 2.5" SP
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- Filter: 0.2-2 micron
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- Approx. shipping weight: 359 lbs.



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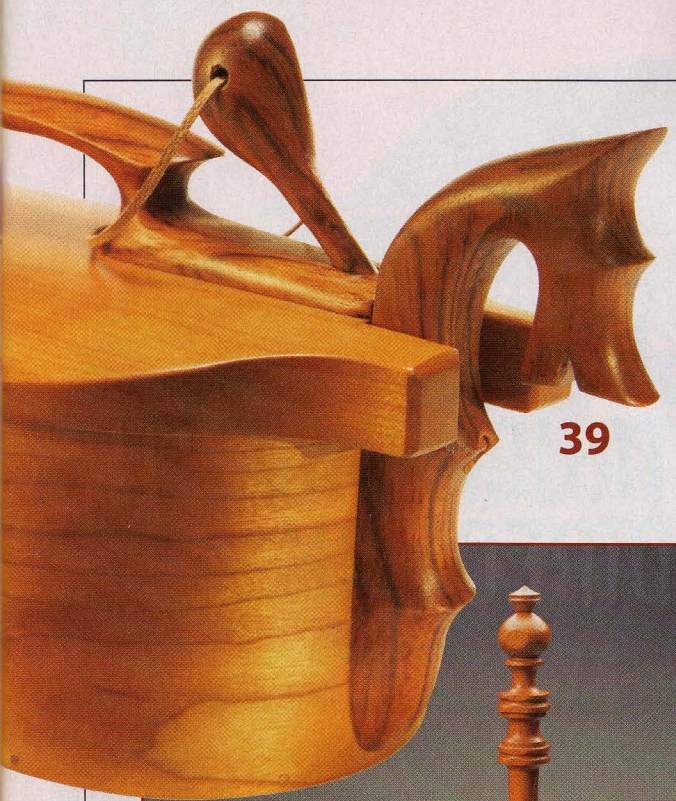
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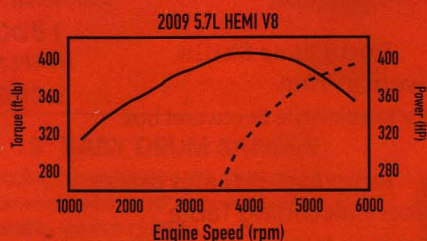


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POWERFUL ENOUGH TO PULL THE ENTIRE TRUCK INDUSTRY IN A WHOLE NEW DIRECTION.



390 horsepower @ 5,600 rpm 407 lb-ft of torque @ 3,950 rpm (When properly equipped)



Despite all of its big talk, when it comes to pushing the boundaries of new technology, the truck world has been downright timid. But all of that just changed. Introducing the all-new Dodge Ram 1500. Now available in the roomier crew cab size. It's our boldest, most advanced truck ever.

A NEW SMARTER HEMI® ENGINE.

Borrowing from the world of Formula One racing, our HEMI V8

now has Variable Valve Timing (VVT) for better performance, improved efficiency⁽¹⁾ and more torque, resulting in better freeway merging acceleration while towing than Ford or Chevy.⁽²⁾ Combined with other advancements, it helps our 5.7-liter HEMI V8 deliver the best combination of horsepower and fuel economy⁽¹⁾⁽³⁾ in its class.

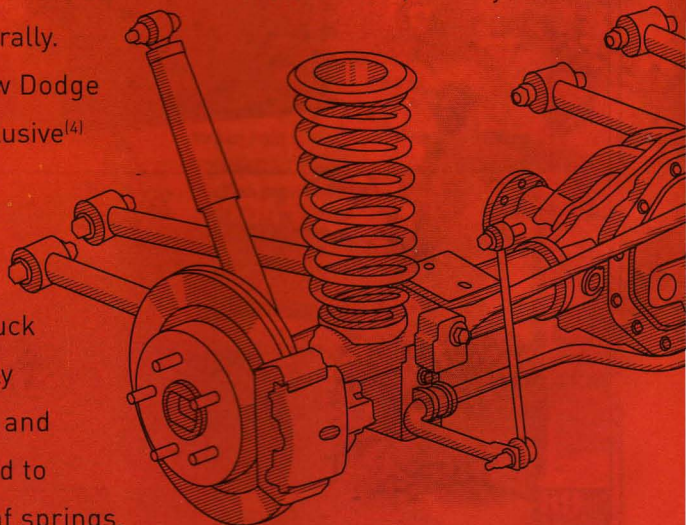
A GAME-CHANGING SUSPENSION.

Maybe you should sit down for this part. Literally. Because the new Dodge Ram's class-exclusive⁽⁴⁾ rear link-coil suspension system is truly a revolution in truck comfort. It greatly reduces friction and weight compared to conventional leaf springs.

The advantages of this new suspension include a smoother highway ride than you get in a Ford or GMC truck⁽²⁾ without compromising payload or towing capacity. You'll also experience improved control and more precise handling so you'll feel more confident driving on all kinds of road surfaces.

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With available uconnect web instant WiFi,⁽⁵⁾ everyone on



⁽¹⁾Based on manufacturer's preliminary fuel economy estimates of 14 city to 20 highway mpg using EPA methodology. Results depend on driving habits and conditions. quality at 55 mph vs. comparably equipped 2008 Ford and GMC; details at dodge.com. ⁽²⁾Comparison based on 2008 model year full-size pickup competitive data consistent with conditions. Always wear your seat belt and obey traffic laws. ⁽³⁾No deductible. See dealer for a copy of Limited Warranty details. Non-Transferable.



board has Web access. For added safety and security, the standard Electronic Stability Program⁽⁶⁾ has Trailer Sway Control and class-exclusive⁽⁴⁾ Hill

Start Assist. We also designed inches of leg room and four more cubic feet of interior volume.

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Ram's innovative in-floor storage system.⁽⁴⁾ Plus you can get new available features like heated and ventilated front



seats, class-exclusive⁽⁴⁾ heated rear seats, and even a heated steering wheel. To top everything off, the all-new Ram is backed by the industry's only Lifetime Powertrain Limited Warranty.⁽⁷⁾

Dodge Ram Crew 1500 take on all kinds of extreme challenges. And crush every preconceived notion you've ever had about trucks. Dodge. Grab life by the horns.



DODGE

THE ALL-NEW DODGE RAM. NEVER BACK DOWN FROM A CHALLENGE.

⁽²⁾AMCI-Certified 2009 Dodge Ram Crew 1500 4x4 5.7L, 20-65 mph acceleration towing 7,150 lb vs. comparably equipped 2008 Ford and Chevy; smooth pavement ride versus the 2009 MY Ram 1500. ⁽⁴⁾Based on *Automotive News* full-size pickup segmentation. ⁽⁵⁾Subscription required, sold separately. ⁽⁶⁾Always drive carefully. Not available on SRT,[®] diesel vehicles, Sprinter, Ram Chassis Cab, and certain fleet vehicles.

American Woodworker

Departments

10 Workshop Tips

Replace the face of your tablesaw's fence, use dowels with a band clamp, add a one-board face vise to your bench, make circles on the router table, build an all-terrain plywood carrier, add wing nuts to toggle clamps, and use a hand-screw to support a workshop light.

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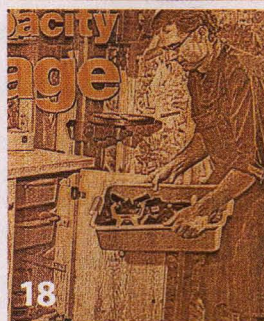
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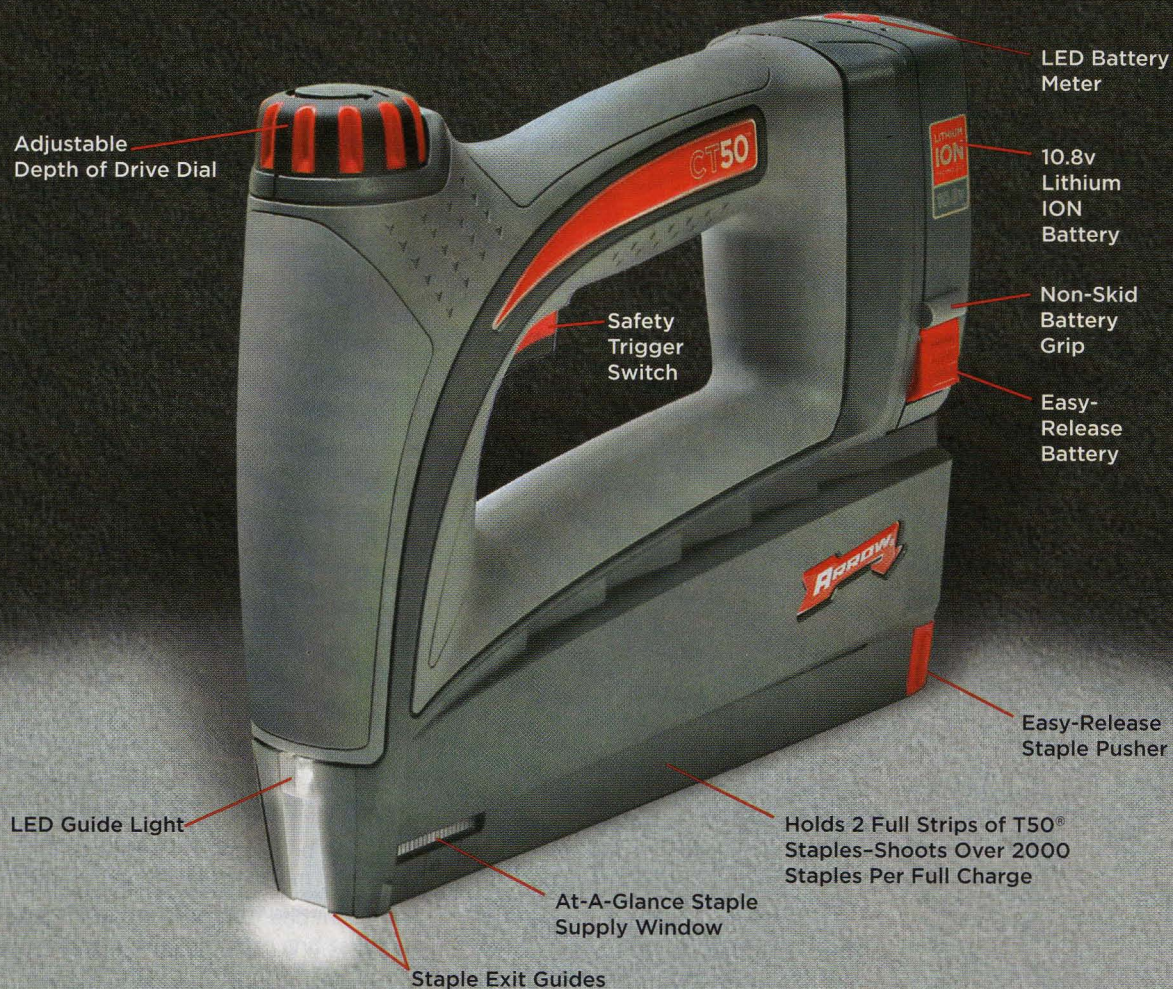


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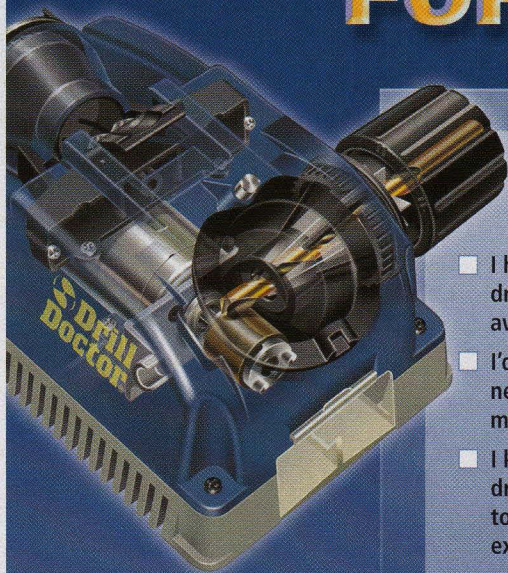
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From the Editor's Desk

No Snowballs in the Workshop

'Twas the night before Christmas and all through the shop,
Every a tool was now quiet, I'd been building non-stop.

The floor was swept clean as it needed to be,
In hopes that the finish would dry dust-free,

The clamps were arranged and aligned in their rack,
So I turned towards the house with the shop to my back.

My wife in her jeans and I in my sweats
Had just settled down to watch some new flicks,

When out on the steps, there arose such a noise,
My wife did remark, "It must be the boys."

Up on my feet, I flew to the door,
Opening it wide brought snowballs galore.

Beaming with pride the face of son Zack,
Helped to me realize there was no turning back.

Then suddenly behind me who should appear,
But my two daughters with eyes so sincere.

I tried maneuvering, lively and quick,
But knew in a moment that it was a trick!

More rapid than paintballs the snowballs they came,
Then I heard someone shouting and calling my name.

From the top of the porch, from the top of the wall,
"Dash away! Dash away!" More snowballs did fall!

With my head full of ice, and one giant hop,
I gave them the slip and ran for the shop.

As I drew the door shut and made the lock sound,
The sweet smell of finish and sawdust abound.

Dressed in my sweats and wet head to foot
I pulled on my apron and aimed to stay put.

Enjoying my realm, I was struck with delight,
The finish was drying and looking just right.

So I pulled up a chair and drew down a book
But in through the window I was getting the look.

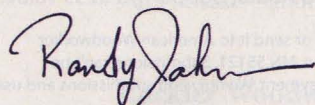
They smiled at me and promised no pranks
If only I'd play, there would be many thanks.

Opening the door, no snowballs came in;
They knew the rules, but still planned to win.

I ran for the house but fell on the bank
My wife passing by gave me a yank.

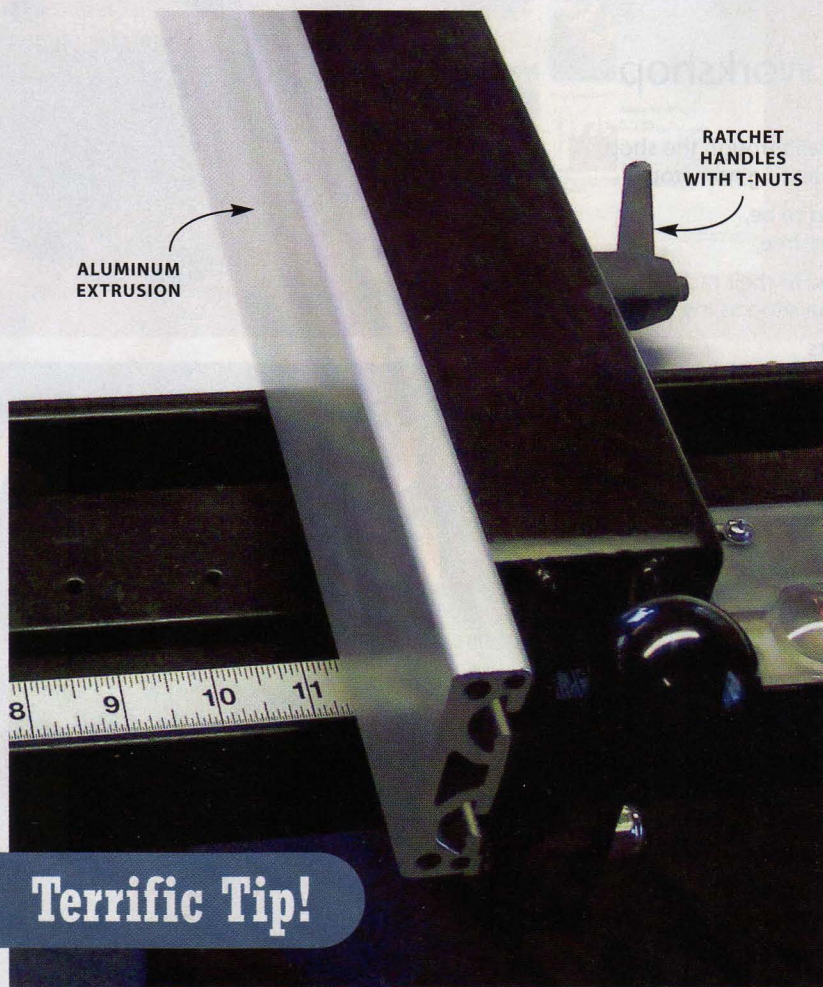
But the kids were on top having a rally
So I just reclined and my blessing did tally.

Merry Christmas and Happy New Year,



Randy Johnson





Terrific Tip!

Fence Face Lift

I NEVER REALLY CARED FOR the HDPE (high density polyethylene) sides on my table saw's fence. They built up a static charge and attracted sawdust and wood chips, but more importantly, they weren't straight. To solve these problems, I bought a 3" x 3/4" aluminum extrusion with T-slots on one side, three T-nuts, and three ratchet handles.

I removed the HDPE sides of my fence and drilled three holes through the fence's steel tube core slightly higher than 3/4" above the table saw's surface, so the extrusion wouldn't rub on the table. The T-nuts allow me to slide the fence face back and forth as needed. Besides not attracting sawdust, my upgraded fence is longer,

taller and straighter than the original, and a little wax made it slicker than the HDPE. When I need to use the right side of the fence, I just detach the extrusion and put it on the other side.

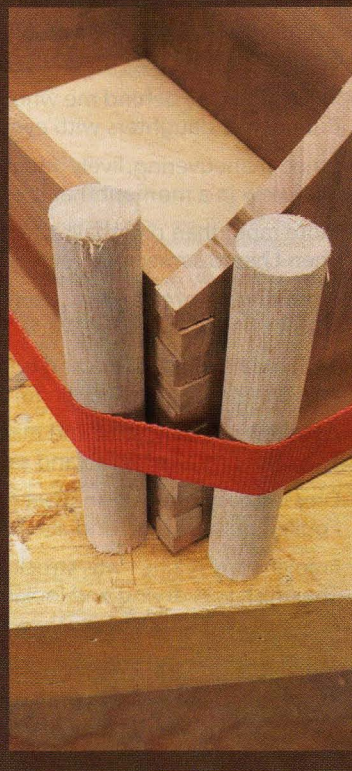
—Mark Lutz

Source: 8020 Inc., www.8020.net, (260) 248-8030, #3034-Lite, 3/4" x 3" x 48" \$30.

Clamping Dowels

I RECENTLY MADE a couple boxes with finger joints. I didn't have enough clamps to glue both boxes at once, so I decided to use band clamps. During my dry run, I discovered that the bands wouldn't allow the joints to close. To fix this, I put a dowel on each side of each joint to keep the band clamp clear of the corners.

—Mark Thiel



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Ultra-Cheap Face Vise

FOR YEARS, I sanded and hand planed panel edges by laying them flat on my workbench. I could never quite squeeze a bench vise into my woodworking budget, so I came up with this fast, inexpensive clamp rail. I recessed a 36" long 2x6 into my

workbench's face and secured it with glue and lag bolts. I kept the clamp rail below the workbench surface and flush with the face of my bench.

The clamp rail extends down from the bottom of the bench's face rail about 3-1/2". Now anytime I need to

sand or plane a panel's edge, I just hold the panel to the workbench and secure it with a couple clamps. I can position it at any height I need and it doesn't budge.

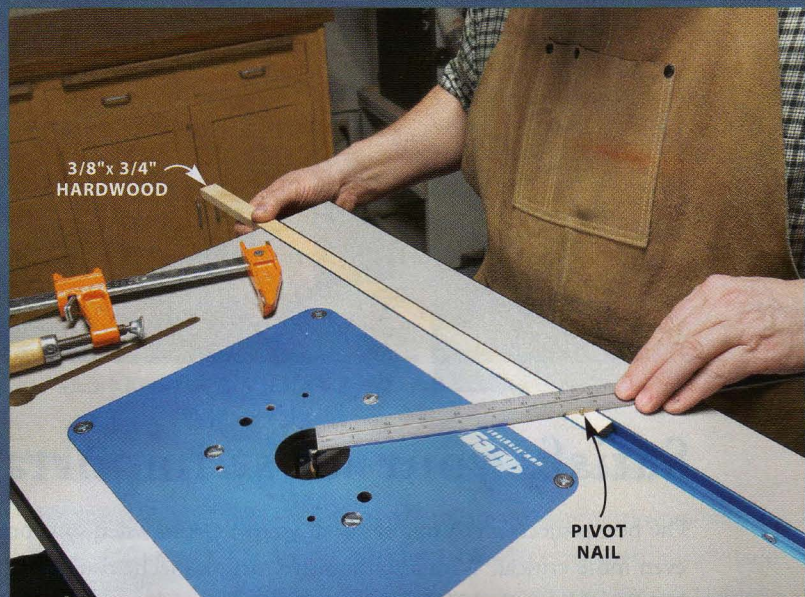
—Aron S. McLoughlin

Quick Circles on the Router Table

ONE AFTERNOON MY WIFE called out to my shop with an urgent request. She needed me to make a round cake plate from 1/4" plywood for a charity auction. I assured her it would be no problem. I was in the middle of a project and didn't want to spend all afternoon on this. Then it hit me: I could use my router table.

I ripped a 3/4"-wide strip of 3/8" hardwood to fit the miter slot and drilled a pilot hole near one end for a box nail, which I inserted from the bottom. Then I clamped the hardwood strip into my router table's miter slot so the distance from the nail to the bit equaled the circle's radius.

I drilled a center hole in the soon-to-be cake plate, and positioned it on the nail. I held the edge of the ply-



wood up while switching on the router, then lowered it onto the bit very carefully. After the bit bored through, I rotated the plywood coun-

terclockwise, opposite the bit's rotation, to cut a perfect circle.

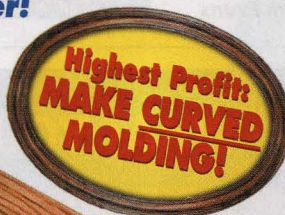
—Doug Bittinger

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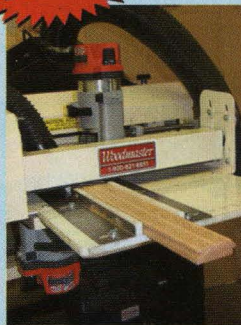
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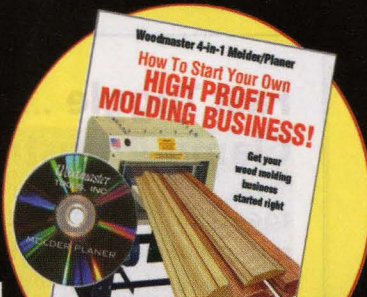
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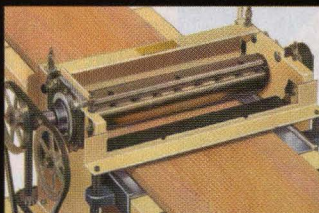
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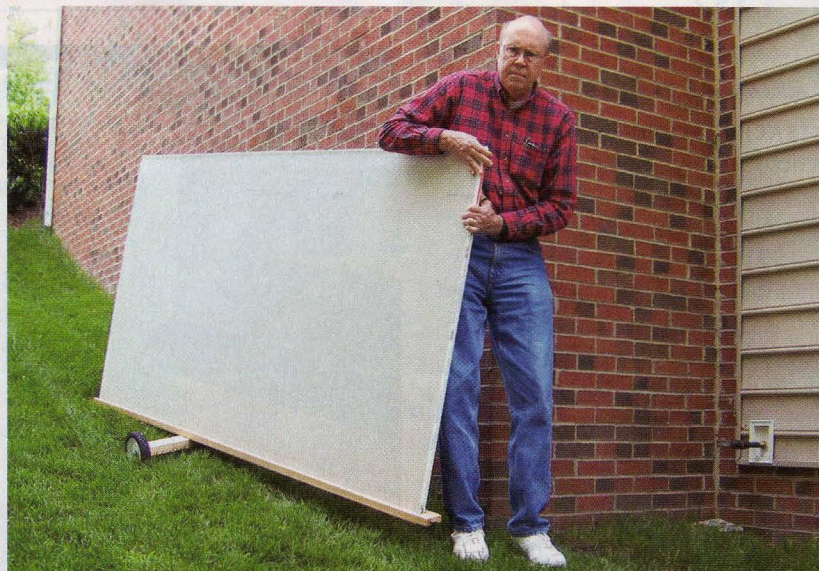
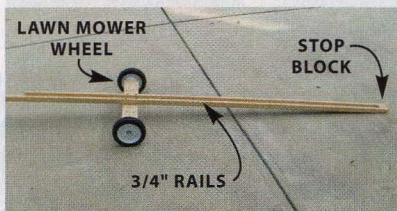
Workshop Tips

continued

Sheet Goods ATV

MY SHOP is in a walkout basement with a steep grassy slope from the driveway. The skateboard-like devices made for moving stock work well on hard surfaces, but not on grass. My solution is an 8-ft.-long two-wheeled cart.

To build the cart, start with a 2-1/2" wide strip of 1/4" plywood, 8 ft. long. Glue and screw two 3/4" square wood rails flush with each edge, leaving a 1" space between them. Fasten a stop block between the rails at one end. It doesn't matter if the rails go all the way to the other end.



Attach 7" lawn mower wheels with 3" lag screws and washers to the ends of an 18"-long 2x4. Screw and glue the 2x4 axle assembly to the plywood about 5 ft. from the stop block. To use the cart, load the sheet

on edge between the rails with one end against the stop block. Lift the top corner of the sheet on the stop block end and roll it wherever you need it.

—Mike Larson

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Legacy Bandsaw

I TEACH WOODWORKING to high school students in Milford, Utah. Their favorite machine is an old Delta bandsaw. Legend has it that it was purchased from the Navy as surplus after WWII. A machine that old would probably have been gray, but years ago our school board decreed that all shop machines would be painted green, and it's still green today. It has been equipped with a 3-phase Dayton 1/2 hp motor and, for safety, a magnetic switch. The fellow who preceded me, teaching shop here for 35 years, also cut a hole in the shroud under the bottom wheel to add a 4" dustport.

My students have a special relationship with the bandsaw because most of their parents fondly remember using it. It has been amazingly reliable. I'm almost heartbroken when something goes wrong with the saw, but usually it's just a broken blade or something simple to repair.

I sure don't mind putting in extra time to maintain a legacy like this old Delta.

—Andy Swapp



This venerable Delta bandsaw is still going strong after serving more than 50 years in a high school shop.



Sander Heaven

MY MILWAUKEE 6010 orbital sander is one tool I would not want to live without. It operates at 12,000 orbits per minute and is powered by

a 5 amp motor. The 4-1/2" x 9-1/4" pad is more than twice as large as a palm sander's pad, which gives the sander greater stability and allows it to work faster. It uses PSA or ordinary sandpaper. I normally just fold a full piece of paper in half lengthwise and clamp it in place. When I wear out one side, I just flip the paper over.

Talk about rugged. This sander is 16 years old and still good as new. I'm sure of that because I have a new 6010 as well, and the old one and the new one are indistinguishable in operation. You see, I'm a bit nuts

about sanders. I've got five others, of all types and sizes, each with a different grit. Is that enough?

—Max Smith

We'll pay you \$100 to share your favorite tools, new or old, with fellow readers. Contact us by e-mail at toolnut@americanwoodworker.com, or mail us at American Woodworker, 1285 Corporate Center Drive, Suite 180, Eagan, MN 55121. Please include digital photos of your tool if possible.

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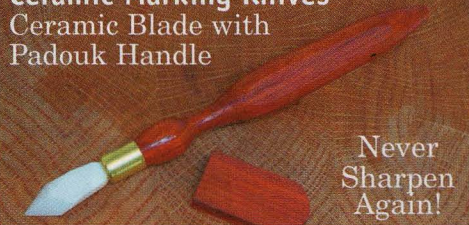
24" Hollowing Tool with 2 HSS Cutting Tips



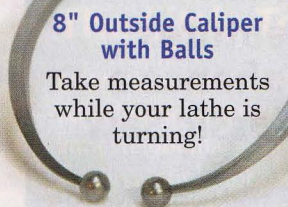
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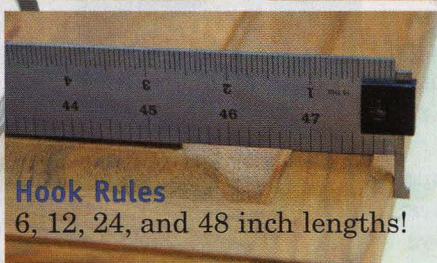


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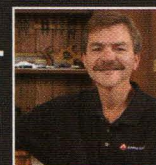
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Fresh Features Enhance a Classic Saw

DELTA'S UNISAW has been a workhorse in woodshops since its introduction in the 1930s. Here's some big news: It has been reengineered and redesigned and is once again being manufactured in the USA at Delta's plant in Jackson, Tenn.

The new Unisaw features a left-tilting arbor with both blade height and angle controls mounted on the front of the saw for convenience. The stops for 45° and 90° cuts can now be easily fine-tuned from the outside, using two Allen screws on the cabinet's front. No more crawling inside the saw to make these adjustments. The blade angle gauge is accurate to 1/2°.

A riving knife moves with the blade height and allows through and non-through cuts with the adjustment of a tool-free mechanism. Safety is further enhanced by a two-position, versatile guarding system with tool-free adjustability.

Unlike the old Unisaw, dust collection is built in. A single 5" port on the saw cabinet has two branches. One goes to a shroud that surrounds the blade; the other goes to the interior of the cabinet. A tool-free arbor lock and a single-piece arbor nut and washer make blade changes fast and simple.

A storage drawer under the extension table has room for essentials, such as the throat plate, guards, blade wrench, push stick, arbor nut, a dado head and three 10" blades, among other accessories.

Source: Delta Machinery, (800) 223-7278, www.deltaportercable.com, Unisaw 36-L336, 3 hp with 36-inch Biesemeyer fence; 36-L352, 3 hp with 52-inch Biesemeyer fence; 36-L552, 5 hp with 52-inch Biesemeyer fence; Prices are expected to range from \$2,800 to \$3,100.

A Smooth Operator

The new EZ-Mount hinge by CST features a patented, hydraulically damped, self-closing hinge mechanism. This allows a cabinet door to close with a smooth, quiet action. A quick-release clip allows for easy door mounting and removal.

The EZ-Mount hinge comes with a unique four-hole mounting plate that won't slip or need readjustment over time. The heavy-gauge steel used in the manufacturing of the hinge increases durability and decreases twisting under heavy load. The hinges come complete in their own poly bag including the screws. Pricing is the same for all styles: inset, full or half overlay.

CST also makes an E-Z Mount hinge plate and door centering guide for quick mounting of both inset and overlay doors the hinges on cabinet sides.

Source: EZ-Mount, www.EZ-Mount.com, (480) 829-6967, Inset Hinge #EZCST-I-0708; Half-Overlay Hinge #EZCST-H-0708; Full Overlay Hinge #EZCST-F-0708; 1 to 50 Hinges, \$4.50 ea., quantity discounts available.





The Little Tool that Could

EVEN IN A LINE OF TOOLS known for being compact, Dremel's latest rotary tool is small. Its size and light weight make the Stylus Cordless perfect for tight sanding jobs or for carving fine details. The first thing you notice when you pick it up is how well it fits into the palm of your hand. Soft-grip grooves on the pistol grip's side are a natural fit for your thumb and forefinger—perfect for the precision and control needed for detail work. The power switch is located on top within reach of your finger for one-handed operation.

The tool weighs a mere 9 oz., yet is surprisingly powerful thanks to a 7.2V lithium ion battery. The variable-speed dial can be set at 10 different speeds from 5,000-25,000 RPM.

Source: Dremel Tools, www.dremel.com, (800) 437-3635, Dremel 1100-01 Stylus Kit, \$80.



Cut Sheet Stock Dead Straight Without Splinters

DEWALT'S NEW TRACKSAW allows you to quickly and accurately cut heavy sheet stock without muscling it around on a tablesaw. The TrackSaw marries the precision of a table saw with the capacity of a panel saw and the portability of a circular saw. It's a great combination.

The wide aluminum track guides the saw for dead-on straight cuts. The zero clearance, anti-splinter edge acts as an alignment gauge so precise positioning of the track is a cinch. Two pairs of anti-slip strips on the back keep the track in place with few clamps, or none at all. The tracks are available in 59" and 102" lengths and all the wear components are replaceable. The saw features a plunge mechanism that allows you to make inside cuts. The TrackSaw comes in two versions: corded and cordless. Both feature common 1-1/4" dust ports for vac hookups. The cordless model uses a 28V lithium-ion battery capable of cutting 121' of 5/8" material per charge.

Source: DeWalt, www.dewalt.com, (800) 433-9258, DWS520 (corded) and DC351 (cordless) TrackSaws, available by year's end, \$600-\$1000 depending on saw and track combinations.

Amazing Performance at a Great Price

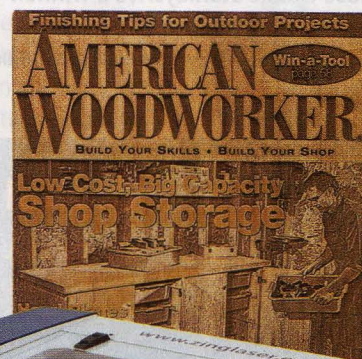
WE'RE ALL FAMILIAR with printing off a computer. What if your printer could create the same image on wood instead of paper? Well, the Epilog Zing laser engraver does just that. With your PC and your favorite graphic software (Adobe, CorelDRAW, etc.) you can lay out text, photos, clip art or logos on the computer and print with a laser. It's that easy. The Zing can engrave on metal, marble, plastic and glass, too.

With resolution as high as 1000 dpi, the engraving detail is amazing. As the name implies, the Zing is no slowpoke, thanks to high-speed micro stepper motors. It can engrave an area as large as 16" x 12". The Zing won't take up a lot of shop space, either. It measures

28-3/4" W x 11-3/4" H x 22-1/8" D and weighs 100 lbs.

"With a more compact design and smaller price point, the Zing is ideal for small-business owners and consumers alike," says Mike Dean, director of sales and marketing for Epilog. "Whether users are engraving iPods, laptop covers or more traditional items like photo albums and pen sets, this system truly performs." It's made in the USA.

Source: Epilog Laser, www.epiloglaser.com, (888) 437-4564, Zing, \$8000.



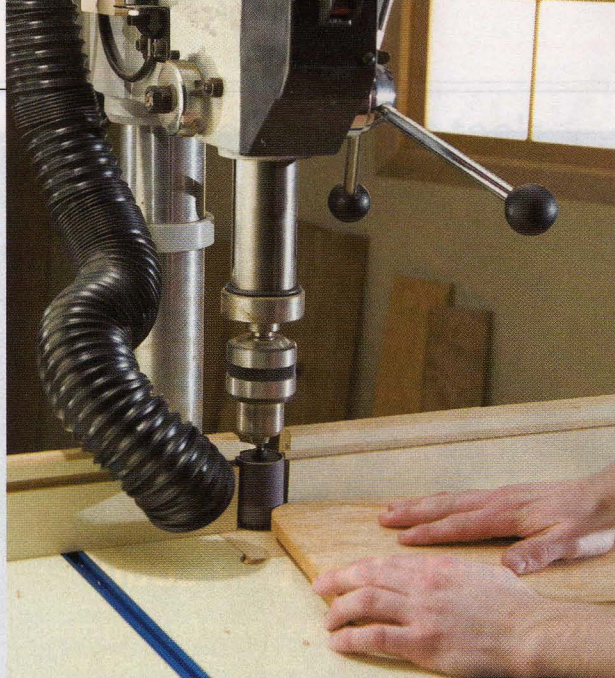
The Well-Equipped Shop

Side Rabbet Plane

THERE OUGHTA BE A NAME for that special kind of tool that rescues you from an impossible situation. Take this one, for example. It's the new Veritas Side Rabbet Plane, an improved version of the old Stanley 79. This plane doesn't make grooves and rabbets. It widens them by shaving their side walls. It has two irons, one for going left and the other for going right, depending on grain direction.

When would you use a side rabbet plane? Well, let's say you've assembled a piece, only to discover that you've made a groove or a rabbet too narrow, and you can't get to it with your tablesaw or router. Or imagine you're repairing an antique that can't be taken apart, and you have to widen a groove. What are you going to do? Pull out the Veritas, and thank your lucky stars that Lee Valley Tools has done such a fine job in updating those classic Stanleys. It's a winner.

Source: Lee Valley, www.leevalley.com, (800) 871-8158, Veritas Side Rabbet Plane, #05P44.01, \$139.



Dust Collection Hose that Stays Put

Imagine a hose that flexes the way you want and then holds its position. Rockler's new FlexForm hose does just that.

Effective dust collection on tools such as drill presses, bandsaws and lathes often means positioning and repositioning a flexible hose to catch the dust. Unfortunately, most flexible hoses have a mind of their own and won't stay put without a clamp. Enter the FlexForm hose with a unique segmented design that allows it to expand and contract in length or bend and twist around obstacles without losing its shape. You can reposition the hose in seconds and it stays put without clamps. The FlexForm hose is available in two convenient sizes: 2-1/2" and 4".

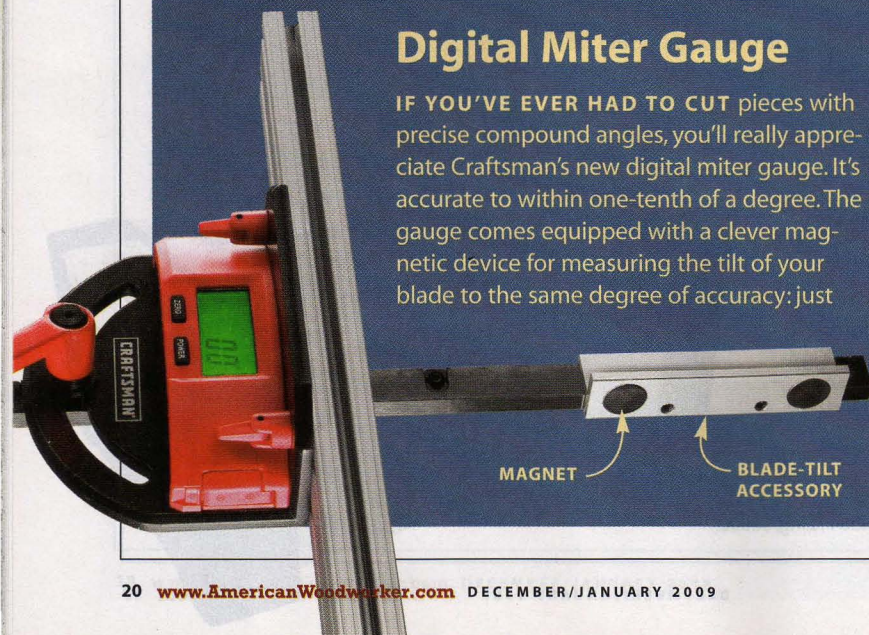
Source: Rockler, www.rockler.com, (800) 279-4441, 2-1/2" FlexForm Dust Collection Hose, #29996, \$16; 4" FlexForm Dust Collection Hose, #29812, \$17.

Digital Miter Gauge

IF YOU'VE EVER HAD TO CUT pieces with precise compound angles, you'll really appreciate Craftsman's new digital miter gauge. It's accurate to within one-tenth of a degree. The gauge comes equipped with a clever magnetic device for measuring the tilt of your blade to the same degree of accuracy: just

what you'll need for those difficult compound angles. Like all good miter gauges, this one has three adjustable expansion points for fitting the bar tight in your saw's miter slot. The miter gauge's range is 50° to the right and 50° to the left. It includes a 15" aluminum fence. The numbers on the backlit LCD screen are large and easy to read.

Source: Sears, www.sears.com, (800) 377-7414, Craftsman Digital Miter Gauge, #29939 (Sears # 00929939000), \$60.



Compact and Powerful Sander

PNEUMATIC SANDERS have long been a staple in production shops. Woodworkers love their power, low profile, and ability to go and go with little maintenance. Porter-Cable has brought all three benefits to the world of electric sanders with the introduction of the 390 series of 5" random orbit sanders. All of the sanders use brushless motors, rather than universal motors.

Brushless motors have several advantages. First, they're more compact, which gives the 390 its low profile. Your grip is closer to the work, so there's more control and less chance of tipping the sander and leaving

nasty swirl marks. Second, they're better at maintaining speed under load. If you push down with any force on a sander with a universal motor, the rotation of the pad slows down or stops, resulting in visible pigtail marks. But when we pushed down with reasonable force on this sander, it barely slowed down. The result is that you can remove stock up to 42% faster, according to Porter-Cable. The 390 motors pull 3.5 amps; most sander motors are less powerful, running from 2.5 to 3 amps.

Finally, there's durability. With significantly fewer moving parts, a brushless motor will last much longer than a universal motor. If you prefer



rugged tools, this is a good pick.

These sanders also have variable speed, a dustport for 1" and 1-1/2" hoses, and are available with either hook-and-loop or PSA pads.

Source: Porter-Cable, www.deltaportercable.com, (888) 848-5175, Low Profile Sander, #390 (H&L), \$129; #392, (PSA, no dust collection), \$129; #394, (PSA with dust collection) \$129.

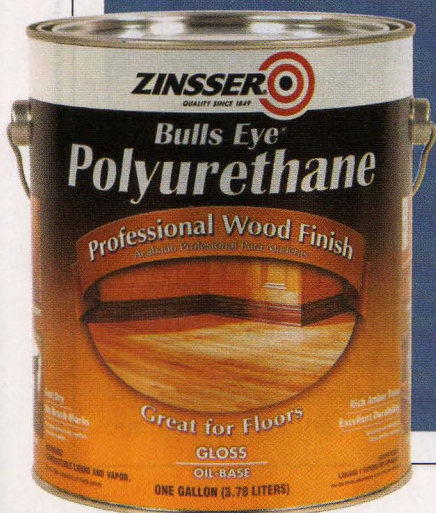
New Finishes From a Familiar Name

ZINSSER IS WELL KNOWN FOR its line of shellac-based products. Now it's also producing oil-based and water-base polyurethane for applications where heat and moisture resistance are important, such as kitchen tabletops. They're available in gloss, semi-gloss and satin sheens,

Bulls Eye Oil-Base Polyurethane is an all-purpose, scratch-resistant, amber-tone finish. With over 50% solids it offers protection from abrasion, alcohol, water, and direct sunlight. The fast-drying formula is ready to sand and recoat in just four to six hours.

Bulls Eye Water-Base Polyurethane is a crystal clear, nonyellowing finish that offers a high degree of protection. The low-odor polyurethane dries in just one to two hours. Cleanup is with soap and water.

Source: Zinsser, www.zinsser.com, (732) 469-8100, Bulls Eye Oil-Based Polyurethane, \$7.50/qt. and \$24/gal; Bulls Eye Water Based Polyurethane, \$13.30/qt. and \$38/gal.



A Great Clamp Just Got Better

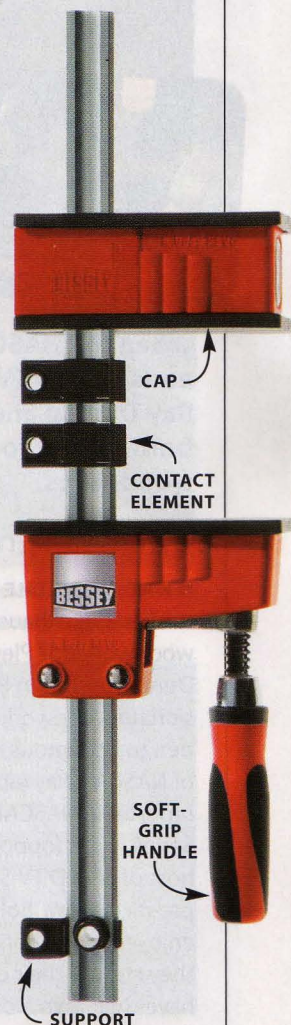
BESSEY RECENTLY INTRODUCED the revo, which replaces their original K Body clamp. The changes are substantial without altering what makes the K Body great. For starters, the Revo comes in two models, the KV and KRV. The KV has a fixed head, while the KRV (right) has an adjustable head.

The Revo sports new soft-grip handles that are larger than the old wooden ones. The Revo can apply about 1,500 lbs. pressure, which ought to take care of any glue-up. The larger jaws are covered with removable, non-marring, glue-repellant caps.

A plastic support has been added on the end of the bar to stabilize the clamp when the jaws are set close together on a bench.

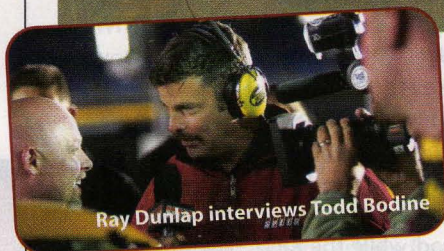
Finally, the REVO features a pair of contact elements that slide along the bar between the clamp heads keeping the material being clamped from contacting the bar and leaving those annoying stains.

Source: Bessey Tools, www.besseytools.com, (800) 828-1004, Revo clamps, available in 8 lengths from 12" to 98," from \$36 to \$72.





A centrally located workbench, great lighting and open tool storage highlight Ray's shop.



Ray Dunlap interviews Todd Bodine

When the NASCAR season ends, SPEED TV reporters Ray Dunlap and John Roberts burn rubber to their woodshops.

By Megan Englehart

WHAT DOES THE SMELL OF OIL, rubber and exhaust have to do with woodworking? Plenty, if you're Ray Dunlap and John Roberts, two passionate woodworkers who also happen to be famous names in the world of NASCAR. Ray (above) is a pit reporter in NASCAR's Craftsman Truck Series. John (opposite page) is the host of SPEED TV's NASCAR RaceDay pre-race show. Both of these guys enjoyed woodworking well before they started their current careers and have their own woodshops in the

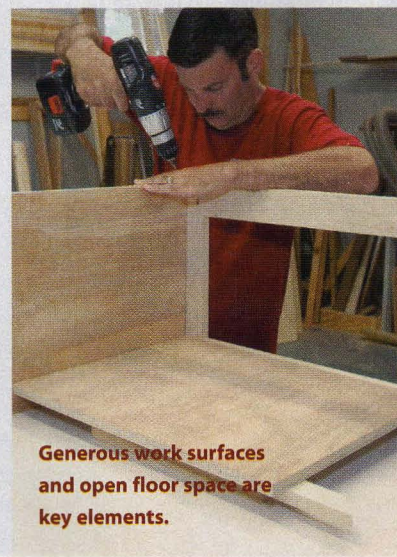
same town in North Carolina. They see their shops as a place to balance their fast-paced NASCAR careers with a bit of tranquility.

"Woodworking is my stress reliever," says Ray. "When we finish the racing season in November, we're off the road until we test at Daytona in January. So for a couple of months, I can go out to my shop, work a full day and relax. I can put on my tool belt and work there for eight or ten hours, like it's my real job."

Ray learned carpentry and woodworking from his uncle and hones his skills with the help of magazines and television programs. He builds cabinets, furniture and bookcases and also uses his shop to complete home renovation projects—Ray admits that some of these projects have been going on for over ten years.

"Planning my shop was really interesting," Ray says, "because I studied pictures of many different shops. I was able to lay out my shop from a blank sheet of paper and arrange things properly. I like having the shop

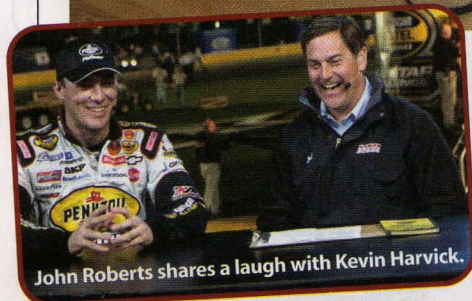
connected to my garage—this makes it easy to move in lumber and plywood. I also like having plenty of space to work and having all my tools easily accessible—just like the pit crews at Talladega. For fun, I've added some NASCAR memorabilia along the walls. I'm happy with the results, although I wish I'd incorporated even more storage space."



Generous work surfaces and open floor space are key elements.



Huge windows and wood floors create a work-friendly environment in John Roberts' shop.



John Roberts shares a laugh with Kevin Harvick.

Like Ray, John appreciates the subtle benefits of woodworking. "It's hard to be on the road more than 38 weeks a year," he says. "But that all disappears when I start woodworking. My shop is my place of seclusion, peace and quiet."

Tired of bumping and banging with cars, bikes and other clutter in a cramped garage shop, John recently completed an addition that includes a brand-new shop with large windows that overlook his backyard and Lake Norman in North Carolina. "I definitely built my shop for the gorgeous view of the lake and the boats. There's nothing better than woodworking while looking out over the water." John laid out the shop just the way he wanted.

And even though he was out of town for most of the construction, he did much of the finish carpentry work himself.

John learned woodworking while he was in college and steadily built his skills over the years. He primarily builds cabinets, furniture, shelving, entertainment centers and jewelry boxes. He also uses the shop to make parts for outdoor projects such as gazebos, decks, fences and trellises. Recently, John had the honor of building huge director and Adirondack chairs for NASCAR RaceDay's Daytona 500 set.



John's shop feels spacious, thanks to its vaulted ceiling and natural lighting.

Tell Us About Your Shop

Send us photos of your shop, a layout drawing and a description of what makes your shop interesting. Tell us what you make in it and what makes your shop important to you. If "My Shop" features your shop, you'll receive \$100.

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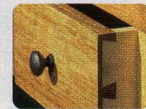
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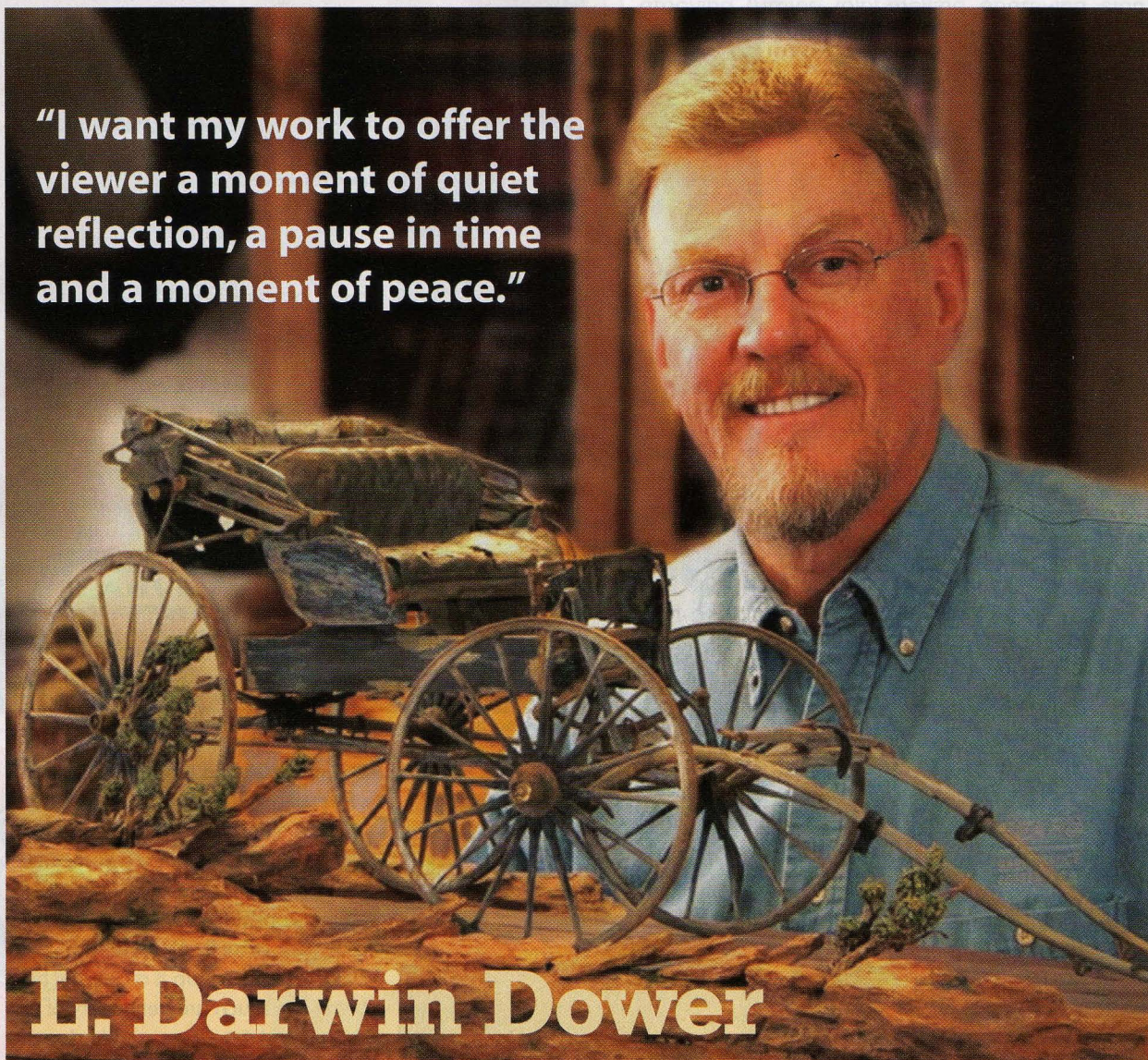


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L. Darwin Dower

A master wood sculptor brings history alive in exquisite detail.

By Dave Munkittrick

GROWING UP ON A UTAH FARM

has given L. Darwin Dower a deep and abiding appreciation for the struggles of his pioneer ancestors, the brave men and women who paved the way for the more comfortable lives we now enjoy. His all-wood sculptures are the work of a storyteller who is also an accomplished artist.

"Each piece beckons the viewer back to an earlier time, leaving clues about how it might have been," Darwin says. "My art and life are inseparable. Stories and artifacts of early frontier life surround me in my studio. My creations in wood are meant to honor the lives and struggles of past times. Through my art, I feel that I walk in the very footsteps of those who have gone before me. Finishing a piece often leaves me with an idea for the next one. Each sculpture I complete is a stop on the way, rather than an end in itself."

Darwin's artistic bent was evident early on. If he wasn't busy with chores, Darwin could be found drawing and painting the world around him. By his teens, Darwin was an accomplished painter, silversmith and jeweler. But it wasn't until he tried woodcarving that Darwin found his true calling. "Unlike bronze sculpture, wood imparts a warmth, depth, richness and life to the setting where it is placed." Sculpting wood combined Darwin's skillful hands with his ability to use colors, creating stunningly realistic sculptures of old west artifacts.



Darwin uses a slow-speed (100,000 rpm) rotary tool to carve large pieces, such as the telephone in "Missing You" (see page 28).

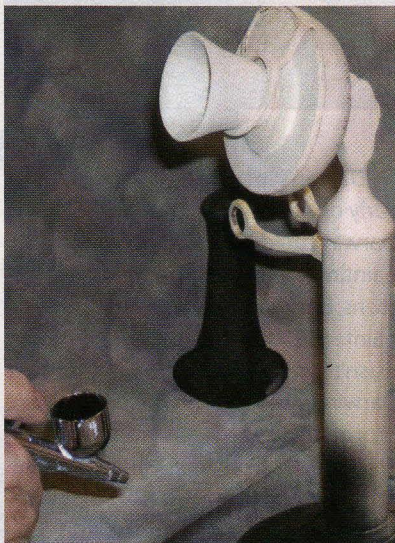


Darwin uses a high-speed drill (350,000 rpm) for delicate work. "Yes, I do occasionally break a piece," Darwin confesses. "When it happens, I scream, cuss a little, and start over."

Despite his early artistic development, practical considerations led Darwin to pursue a career in retail management for forty years before turning to sculpture as a full-time occupation. Those forty years in the desert were not wasted, however, as Darwin spent most of his free time, including vacations, developing his art: "The forty years were really an incubation period for my life's work."



Whenever possible, Darwin uses a real life object as a model for his carvings. Here, he's carving details into a tattered book.



Darwin's first finishing step is a base coat of artist's oil paint, applied with an air brush.



Darwin meticulously layers numerous wash coats of artist's oils to create the final aged appearance.

Rotary Tools Are The Key

When Darwin first took up woodcarving, he used basswood, hand tools, knives and common electric rotary tools. But he found that these tools and materials did not allow the level of detail he wanted. Fortunately, a fellow carver introduced Darwin to a re-designed dental drill that worked like a dream for delicate work. "It turned at an astounding 300,000-400,000 rpm, with virtually no vibration," Darwin said. "To top it off, dental bits come in a much greater variety of shapes and sizes than standard rotary tool bits."

Today Darwin does almost all his carving with two air-driven rotary tools. "My slow-speed tool (100,000 RPM) is aggressive and has a lot of torque. It accepts larger bits and can shape wood quickly. My high-speed dental drill has a much lower torque, but allows me to achieve extremely fine detailing."

Of course, solving one problem often poses another: Darwin found the high-speed drill made the basswood fuzz up like crazy. A friend suggested using tupelo instead, which worked much better. The rest is history—living history in wood.

No, It's Not a Planer



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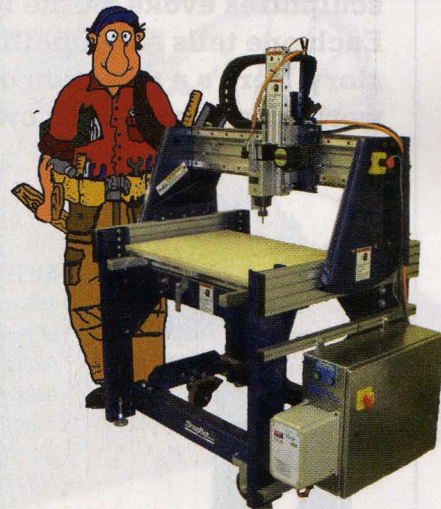
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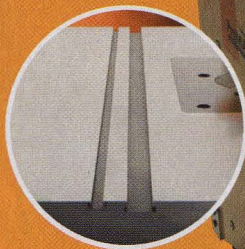
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A Great American Woodworker

Darwin Dower's realistic wood sculptures evoke a time long gone. Each one tells a compelling personal story. Here's a selection of Darwin's work, described in his own words.

continued



MISSING YOU

This sculpture is a depiction of someone who has just found her old autograph book. After examining the words written on its pages, she reflects on fond memories of the past.



HANDCART

Perhaps those who perished and were laid to rest were the most fortunate. Others had to trudge on through the snow and bitter cold. Frostbite became their enemy, and many lost their limbs.



FOOTSTEPS OF FAITH

The shoes were worn thin, patched and tattered from a walked journey of more than 1,300 miles to the Great Salt Lake Valley. Often the only comfort from the hard ground was a warm but worn quilt. Who was this courageous pioneer woman?

PRIZED POSSESSION

A good saddle, like a comfortable shoe, could make the difference between a miserable ride for both human and horse and a comfortable day working in this beautiful country. We had pride in our gear and our work.



RESTING IN RED ROCK

Perhaps the most noteworthy self-taught physician in frontier Utah was Wiley P. Allred. With horse hitched to his buggy, he traveled through much of the county delivering babies, treating gun shot wounds, or pulling teeth.



SATURDAY NIGHT SOCIAL

Frontier times were hard, with only an occasional chance for entertainment. Shoes were shined and jewelry displayed on special Saturday nights.



GRANDPA'S BIBLE

Saturday nights were special times on the farm. With chores complete, the family gathered around a roaring fire and read verses from Grandpa's Bible.



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To see more of Darwin's work, visit www.darwindower.com. Darwin has also published a book, *The Wood Sculpting of L. Darwin Dower*, which is available through the artist's website or online at www.barnesandnoble.com. Darwin is represented by The Mission Gallery at www.themissiongallery.com. Sculpture prices range from \$4,000 to \$20,000.

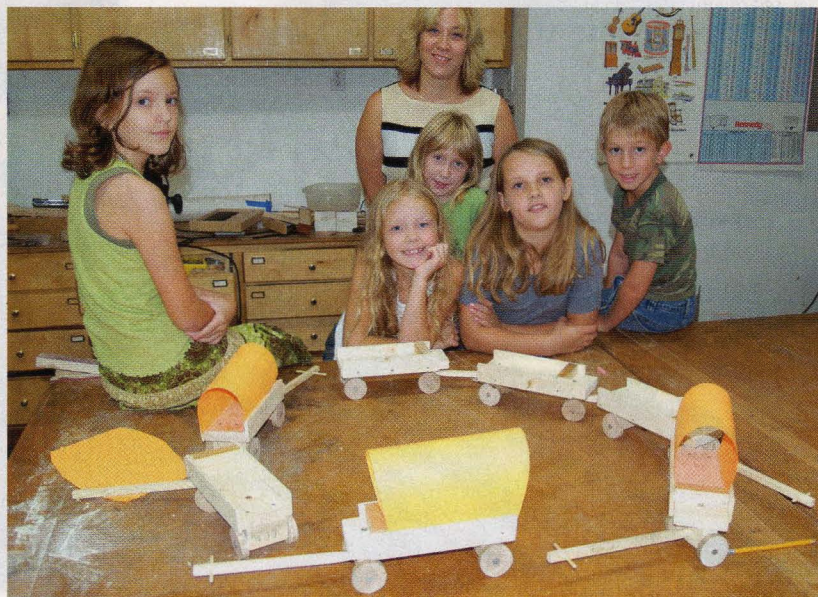
Incorporating woodworking as a teaching tool for all grade levels.

By David Radtke

MAKING SUBJECT MATTER relevant to students is a challenge teachers face on a daily basis. One school with a unique approach to meeting this challenge is Clear Spring School, located in Eureka Springs, Arkansas. I first learned about this independent school and its unusual curriculum while talking with Doug Stowe, founder of the school's woodworking program, "Wisdom of the Hands."

Clear Spring School is dedicated to the idea that hands-on learning helps students learn how to think. Its small enrollment, about 80 students at all grade levels, from pre-school to high school, may make Clear Spring School seem irrelevant. But its mission, "to promote a lifelong love of learning through a hands-on and hearts-engaged educational environment" is noteworthy.

"My involvement with the school first started back in 1976, when students from Clear Spring School



Clear Spring School is dedicated to the idea that hands-on learning helps students learn how to think. These social studies students built covered wagons to better understand the challenges America's 19th-century pioneers faced as they headed west.

would come to my pottery studio for art classes," says Doug, reflecting about how the woodworking program started. "Then, over the years, as my focus turned from pottery to woodworking, I built bookshelves for the school's first library and got further involved when my daughter became a student. In 2001, we began the Wisdom of the Hands in

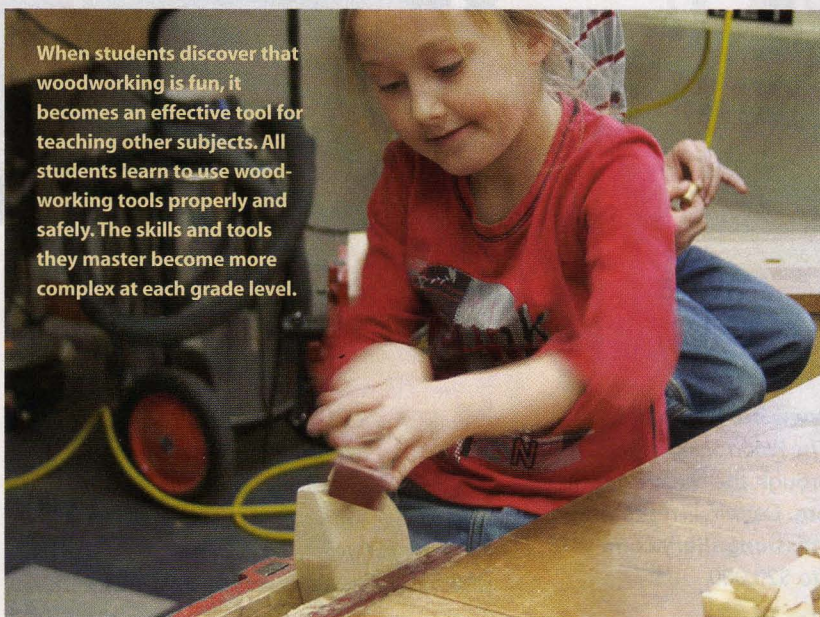
response to the drastic decline in woodworking programs all across America. Almost immediately, we saw the potential of the woodshop to create hands-on learning opportunities in all subject areas."

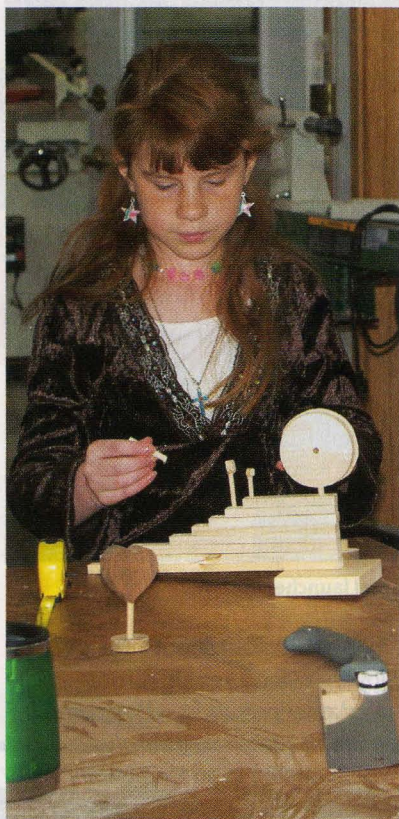
The Wisdom of the Hands program at Clear Spring School has the following objectives:

- To make woodshop participation relevant to the lives of all students and meaningful in their education.
- To use the woodshop to reinforce and support each student's interests in other areas of study.
- To serve as a model to demonstrate the relevance of woodworking in modern education.

Progressive educators have long recognized the relationship between the hands and learning; so the philosophy of incorporating hands-on learning as an integral part of the educational process is not new. The Wisdom of the Hands program at Clear Spring School has been heavily influenced by Educational Sloyd, a movement that originated in Finland and Sweden during the latter part of the 19th century. The Sloyd system

When students discover that woodworking is fun, it becomes an effective tool for teaching other subjects. All students learn to use woodworking tools properly and safely. The skills and tools they master become more complex at each grade level.





Third and fourth grade scientists study the solar system.

espoused teaching woodworking skills gradually throughout a child's education, with the skills becoming increasingly complex in accordance with the child's intellectual development. This method was said to educate the child's character, encourage moral behavior, greater intelligence and industriousness.

Teachers at Clear Spring School have designed a curriculum that recognizes the benefits of Educational Sloyd's hands-on learning. The Wisdom of the Hands program has the flexibility to be tailored to benefit individual students according to their interests, as well as adapting to the changing world in which they live. While the Clear Spring curriculum would be difficult to reproduce elsewhere, Doug believes it can be used as a model for reintroducing woodworking and other industrial arts classes to schools across the country.

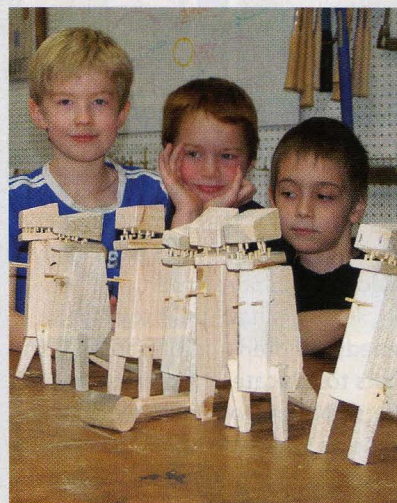
Wisdom of the Hands

At Clear Spring School, students start having fun with wood as pre-schoolers, where they create sculptures by assembling and gluing wood pieces. The goal is to make woodworking an activity that students enjoy and look forward to as their skills grow and their education progresses. The school's excellent student-to-teacher ratio—about eight to one—ensures that every student develops safe and sound woodworking skills.

Starting with elementary grade classes, woodworking is woven into other subjects. For example, the third and fourth grade class (grade levels are combined at Clear Spring) recently studied America's westward expansion during the last half of the 19th century.

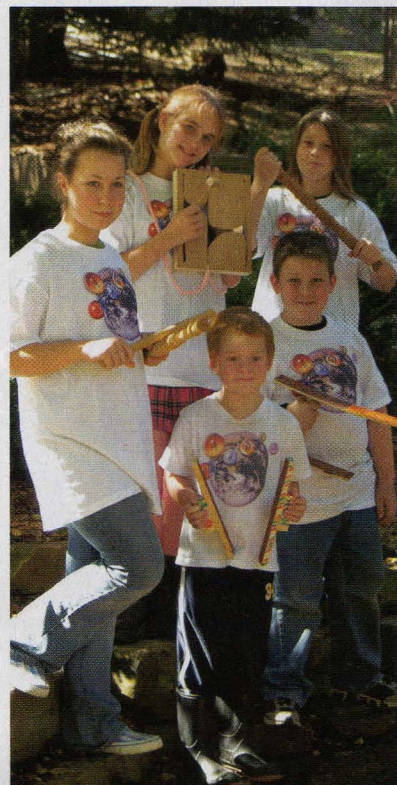
To personalize the pioneer experience and understand the technologies of the time, the students researched and then built wooden models of covered wagons. Encouraged to think about what it must have been like to leave home and head west to start a new life, the students outfitted the wagons with scale-sized boxes and containers representing the provisions they would need. Seeing their provisions dwindle while talking about the trip west gave the students a better understanding of the times and challenges these early settlers faced. After following the settlers to their California destination, the students made quill pens from wood and used them to write letters to relatives "back home," explaining their adventures on the journey.

Another middle school class uses woodworking to reinforce the study of solid geometry. Students make wooden geometric forms (spheres, cones, cubes etc.), which they then can use as study aides. This hands-on activity helps students understand concepts behind mathematical formulas such as those for volume and surface area.



First and second graders learn about natural history.

The high school trigonometry class recently built wooden trebuchets and other object launchers to study trajectory paths and the forces acting on the object and launchers. For those high school students with extra interest in woodworking, a woodworking club provides extra time in the woodshop.



Music students make their own instruments and perform at community folk festivals.

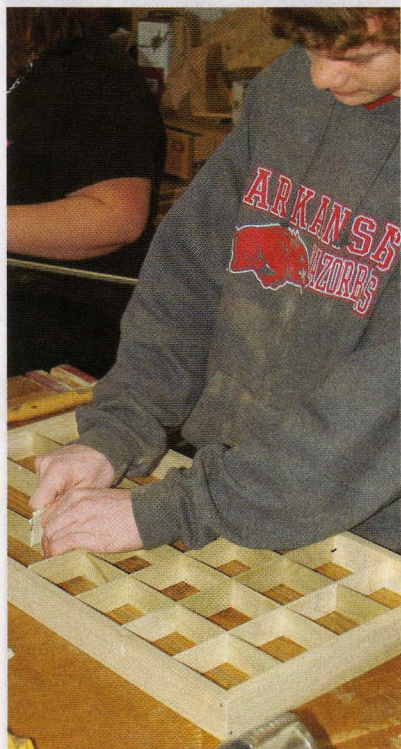
Woodworking and Community Service

Clear Spring School students are actively involved in community service and as a result, the school enjoys avid community support.

Students have built toys for needy children and presented seminars to educate community members about woodturning and other aspects of woodworking. Students have also developed and sold woodworking projects to help fund field trips and camping trips that are part of Clear Spring School's educational curriculum.

Hope for Change in Woodworking Education

It's no secret that woodshop and other industrial arts education classes have been disappearing from public schools, labeled outdated or irrelevant. But as Clear Spring School attests, hands-on learning can be an important educational tool.



Ninth and tenth grade earth science students build mineral-collection boxes.



Trigonometry students study trajectory paths and launcher design.

A growing number of educators and scholars agree that industrial arts programs benefit students' intellectual, social and career development. For example, in the article "Industrial Arts: Call It What You Want, the Need Still Exists," which recently appeared in the *Phi Delta Kappan* (www.pdkintl.org/kappan/k_v89/k0803how.htm), author James Howlett argues that teaching technological literacy at the expense of hands-on skills training is wrong for students. Howlett further states that "from middle school to high school, students need not only the opportunity to explore a variety of trade skills but also the opportunity to learn the skill as well."

In Doug Stowe's view, by focusing on theoretical learning at the expense of hands-on experience, traditional public schools are producing graduates that are intimidated by tools and have a lack of appreciation for handmade objects and the artisans who produce them. Through Clear Spring School and Wisdom of the Hands, Doug hopes to reverse this trend one student at a time.

For more information about woodworking at Clear Spring School, visit <http://wisdomofhands.blogspot.com>.

To learn more about Educational Sloyd, visit www.americanwoodworker.com/sloyd to read "Beginning Sloyd: Woodworking in an Elementary School" and other related articles written by Doug Stowe.

Doug Stowe has been a woodworker since 1976. He is a frequent contributor to woodworking magazines and the author of five books. He started



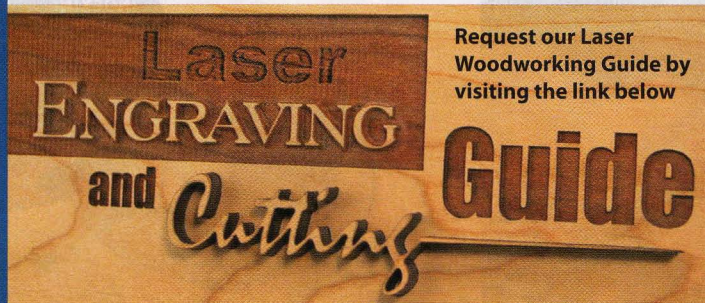
Wisdom of the Hands in 2001 to answer the question, "Are woodshops still relevant to education in the computer age?" The answer, "Even more so!"

Tell us about a dynamic woodworking school or vibrant teaching program.

What makes it work? Point out notable teaching strategies and student accomplishments. Explain how the program excites students about woodworking and tell us how it helps them develop woodworking skills. Whether the program operates in a public school, community center or a private workshop, we want to hear about its success. E-mail your story to schoolnews@americanwoodworker.com.



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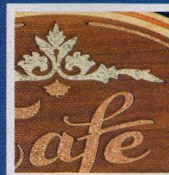
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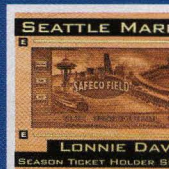
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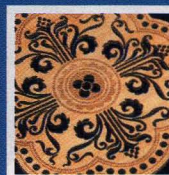
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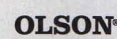
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9 Tips for Tablesaw Moldings

**Router bits
only go so far.
The Magic Molder
increases your options.**

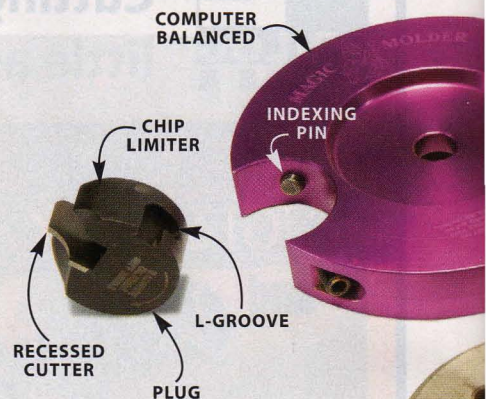
by Tom Bockman

TABLESAW MOLDING HEADS have been around for decades, but the Magic Molder redefines the category. It's a precisely built piece of machinery that's easy to install and operate. In fact, using it can be addictive. The Magic Molder can create hundreds of distinctive molding profiles

and it consistently provides excellent results. Make no mistake, this ain't your grandfather's molding head (photo, above).

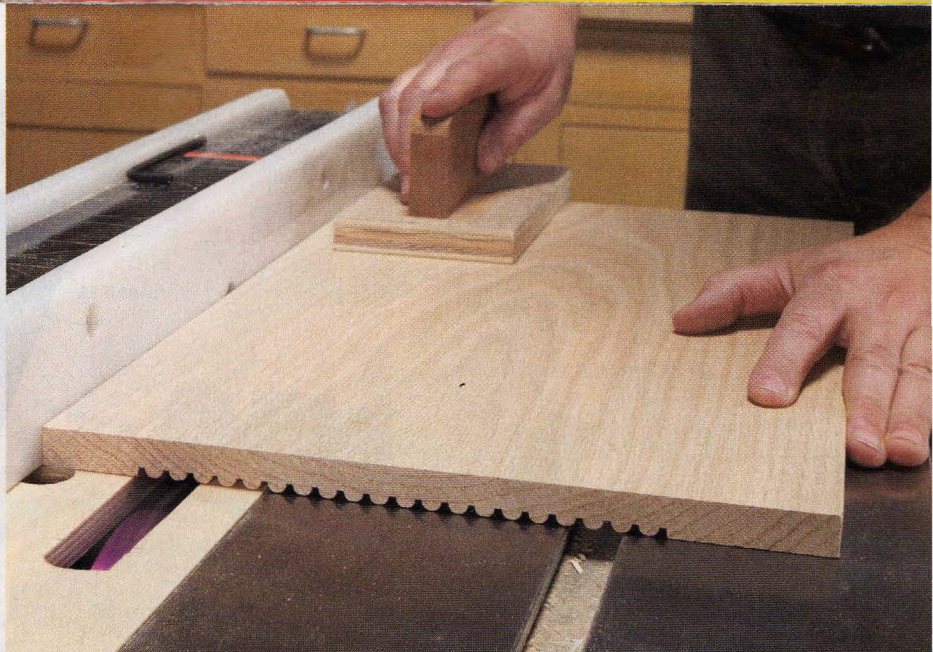
For re-engineering an old design, improving it and making it safer, the Magic Molder won the Association of Woodworking & Furnishings Suppliers (AWFS) 2007 Sequoia Award for Safety and Ergonomics.

Carbide profile cutters are recessed in plugs that are securely housed in the molding head. The plugs feature anti-kickback-design and L-shaped grooves that align





**GRANDFATHER'S
MOLDING HEADS**



↑ **CREATE SUPER-WIDE MOLDINGS.** Make the first pass on center. Reset the fence to make an adjacent cut and make two passes, one on each side of the center cut. Repeat the process until the molding is complete. The only limitation is the capacity of your saw's rip fence.

The Magic Molder can also make smooth cross-grain cuts, as long as you use a back board to avoid blowing out the back edge. Regardless of grain direction, the Molder cuts without hesitation or chatter.

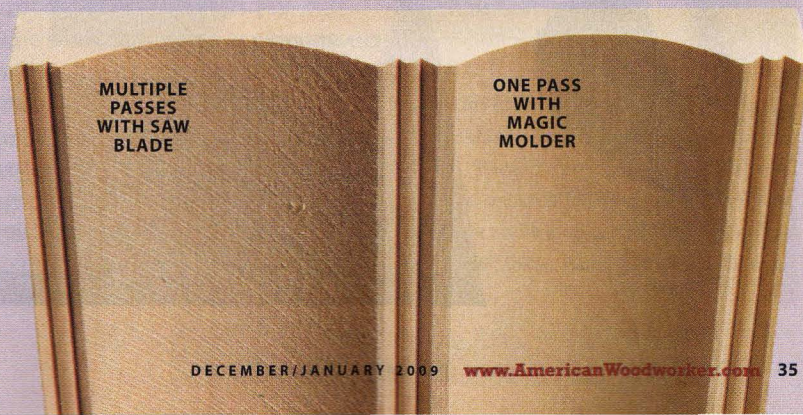
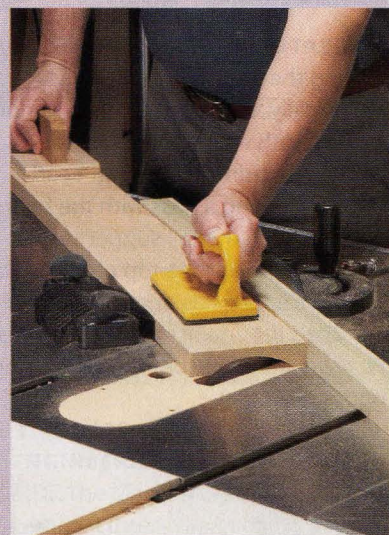
with indexing pins in the head. Installing or changing the plugs takes less than a minute. Slide each plug onto the indexing pin, rotate the plug forward and lock it in place with the hex screw.

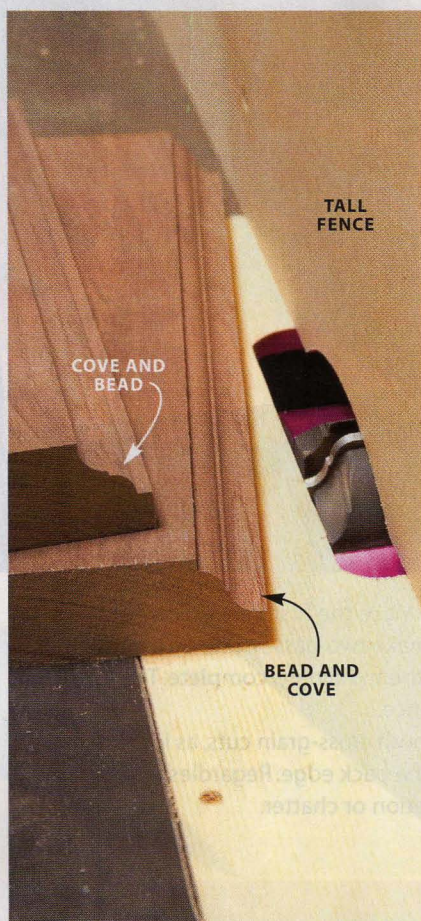
The large molding head is computer balanced to run smoothly. It's surprisingly quiet—much easier on the ears than a router.

The Magic Molder provides interesting molding options that aren't possible with a router table. And assuming you already have a tablesaw, your initial investment (\$107 for the molder head) is similar to the cost of a small router. Each plug set (2 profile plugs) costs \$99.

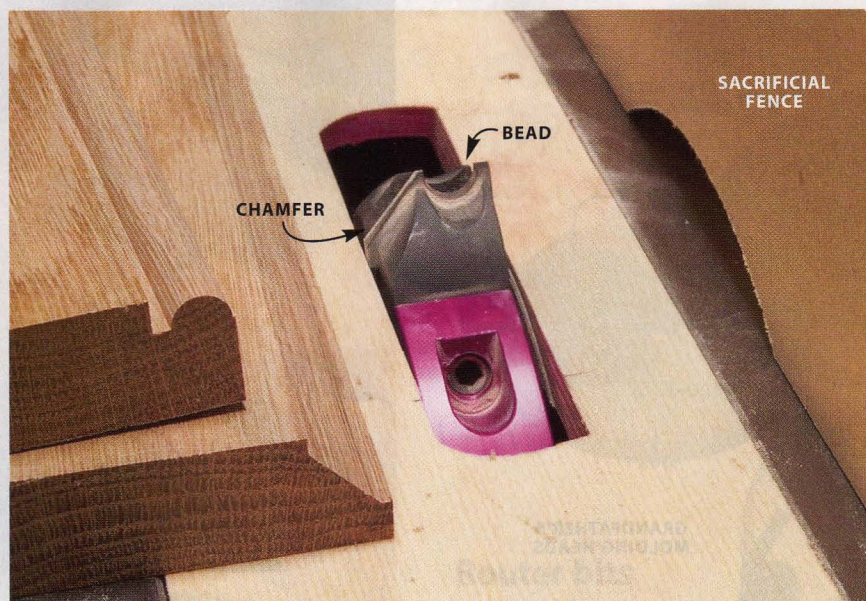
Eighty-three plug sets are available. In addition to specific profiles such as cove-and-bead or ogee, many of the profile sets are simply shapes—hollows, rounds and flats in various combinations. Combining these shapes to create unique moldings is the challenge—and the reward—that the Magic Molder presents.

CUT COVE MOLDINGS in a single pass, with great results. That's right, great results with a single pass! Cutting coves with a tablesaw blade is a tedious job, because the thin blade isn't designed to make a raking cut. You have to raise the blade in tiny increments and make numerous passes to complete the cove. And then you have to sand out hundreds of deep scratches left by the blade's teeth. The Magic Molder has plenty of mass to handle the skewed cutting angle. Simply install a flute profile plug set and use a moderate feed rate to create a coved surface that requires minimal sanding.





↑ **CREATE DIFFERENT EFFECTS** by running the workpiece vertically or horizontally. Check out the two sample profiles. Both were made from the same setup using a cove and bead plug set. Making a pass with the board on edge (note the tall support fence) places the cove at the top of the molding (top sample). Making a pass with the board flat against the table places the cove at the bottom of the molding (bottom sample).



↑ **USE A SACRIFICIAL FENCE** to create different profiles. Many plugs contain two profiles. To isolate each profile, you house the opposite side of the plug under the fence. The setup shown here was used to house the bead and create the chamfered edge. To create the beaded edge, the fence must be moved to the left side of the plug, so it can house the chamfer.

COMBINE OPERATIONS

to make complex moldings:

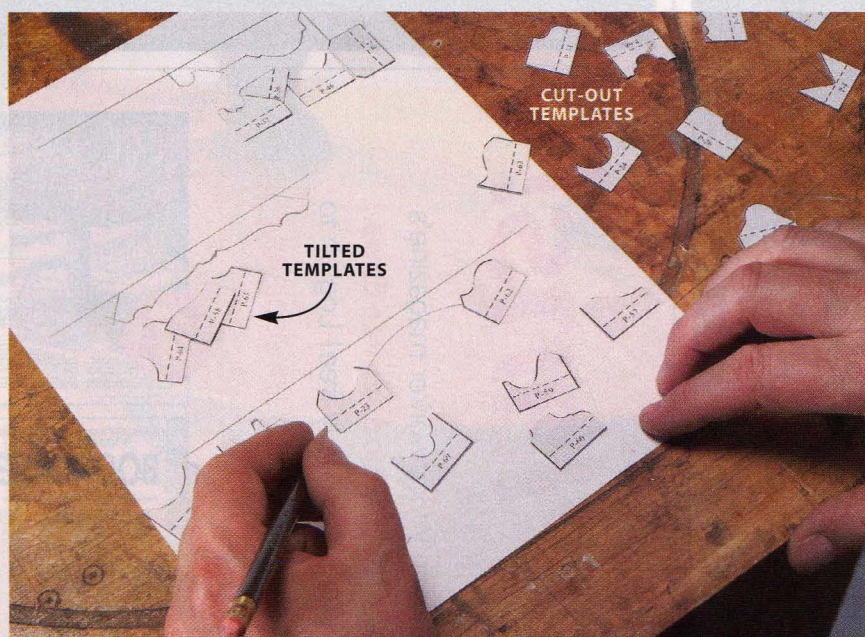
- Use multiple profile plugs.
- Tilt the arbor.
- Reposition the fence.
- Rotate the board end for end between cuts.
- Make a skewed cut.
- House the cutter.



TAKE ADVANTAGE of your saw's tilting arbor to create different edge treatments with the same cutter. Tilting also allows using the corner of the cutter to create distinctive cuts on the face of a board. For example, tilted 45°, lowered so only the corner protrudes and used with the fence, this straight cutter will cut V-grooves. You should install a zero-clearance throat plate whenever you tilt the arbor.

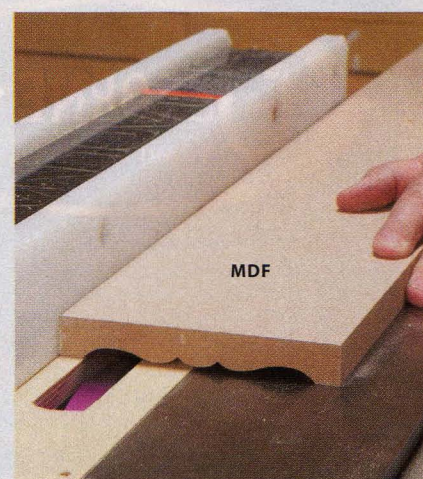


CREATE ROUNDED MOLDINGS by making your own templates. Shape the template to match the outside radius of the molding you want to make. Attach a fence and clamp the template to your saw's rip fence with the center of the arc aligned with the saw's arbor. Then simply hold the workpiece against the template as you make the cut.



↑ USE SHOP-MADE PROFILE TEMPLATES to create unique moldings. Playing with the templates can help you decide which of the 83 available profile plug sets to buy. The Magic Molder comes with a poster showing full-size profiles of the sets (LRH Enterprises will send you a poster free of charge, see Source, at right). To make your own templates, photocopy the poster's full-size profiles onto sheets of paper. Glue each sheet to heavy card stock and then use a razor knife to cut out the individual profiles.

Clearly mark the template faces, so you don't mistakenly use one backwards. Also, creating moldings often involves tilting the templates—make sure you tilt them in the same direction that your saw's arbor tilts.



↑ CREATE MOLDINGS IN ENGINEERED WOODS such as MDF. The Magic Molder's durable carbide cutters can even be used to cut solid-surface materials, such as Corian.

Source LRH Enterprises Inc., www.LRHent.com, (800) 423-2544, Magic Molder, \$107; Profile Plug Sets, \$99 each; 2-Plug Starter Set (molder and 2 plug sets), \$265; 4-Plug Advanced Starter Set (molder and 4 plug sets) \$416; 4-Wing Professional Molder Head, \$241; Magic Molder Fence, \$166.

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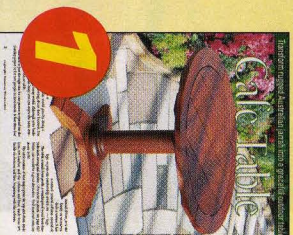
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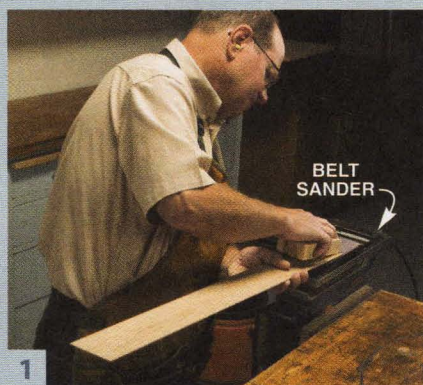
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Norwegian Tine

By Jim Anderson and Cathy Balazs

ALMOST EVERYONE ASSOCIATES oval bentwood boxes with the Shakers. But Scandinavian artisans were making similar lidded boxes, called tine (pronounced "tee-nah") long before the Shakers settled in America. As collectors of Scandinavian antiques know, tines come in all shapes and sizes. They can be plain or highly decorated, painted or intricately carved.

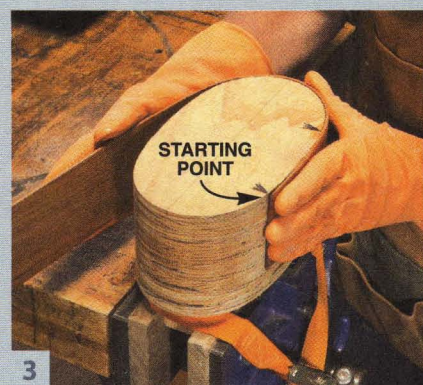




1 The **tine's side** is a thin wooden band that's bent into an overlapping oval shape. Determine which end of the band will be hidden behind the overlap. Then taper its face so a bump won't show at the joint.



2 Soak the band in boiling distilled water to make it pliable. I use a watertight box and two hotplates for fast, uniform heating. Use wooden tongs to remove the steaming hot band and wear gloves to protect your hands.



3 Place the tapered end of the band at the form's start point and wrap counterclockwise. Make sure the band's tapered surface faces out, against your fingers.

I'm a tine maker. My tines ("tiner" in Norwegian) are rooted in tradition, but they have a modern twist. I use fine hardwoods and finish my tines to show the woods' beauty. Instead of using root lacing, I use cane. I learned the craft from Johann Hopstad, a Norwegian tine maker, but I confess that studying and making Shaker boxes has also been influential.

This tine (Fig. A, page 41) is one of my favorites, because the ends feature stylized fjord horses, an ancient breed from western Norway. Horses have always played an important role in Scandinavian culture and are often featured in Scandinavian designs.

Tines don't require many materials, so you can splurge on exotic wood. I use kiln-dried "Select and Better" grade hardwood for bending. Cherry, ash, maple, and black walnut all bend easily. The tine shown on page 39 is made of cherry and bubinga.

You'll need a 3" by 28" blank that you can resaw to create the 3/32" thick bentwood band, a 6" by 10" piece of 1/4" hardwood plywood for the bottom and a 3/4" by 6" by 12" board for the lid. The horses, handle and locking pin require a 3" by 28" (or comparable) length of 1" thick stock. You'll also need a 1/4" dowel, a box of square toothpicks, several strands of fine (1/8" wide) natural cane and some wooden toy car axles (see Sources, page 44).

Start with the form

A tine's oval shape is created by bending a wooden band around a form. To make the form, stack and glue plywood scraps (Fig. B, page 43). Then use the oval pattern to draw the shape (Fig. C). Cut the shape on the bandsaw and use a disc sander to smooth the profile. Transfer the pattern's two reference marks to your form and screw a block on the bottom, so you can clamp the form in your bench vise.

Bend the band

1. Select a straight board that's free of knots, checks and cracks. Cut a 3" by 28" blank and resaw it to create a 3/32" thick band. Remove the saw marks by sanding.

2. Taper one end of the band with a bench vise-mounted belt sander to ease the transition at the overlap (**Photo 1**).

3. Get ready to bend. Clamp the bending form in the vise. Place a strap clamp around and down below the form, so it's out of the way, but available for use.

4. Soak the band for about 15 minutes in boiling distilled water inside a covered box (see Sources).

5. Remove the band from the water (**Photo 2**). It will be very hot, so wear rubber gloves to protect your hands. Be prepared to work quickly. Place the tapered end of the band at

the start point on your form and wrap counterclockwise (**Photo 3**). Complete the wrap (**Photo 4**). Add a caul, make sure the band is straight and tighten the strap clamp, with its ratchet over the caul.

6. Pencil a pair of alignment marks on the edge of the band, so you can bend it back to its original position later. Then take a three day vacation while the band dries.

Glue the band together

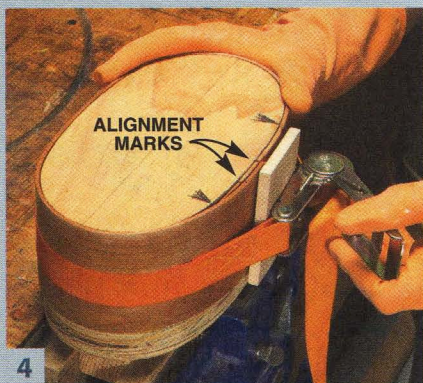
7. Remove the band from the form and clamp it back together with spring clamps for a couple more days. This allows the band's inside to dry.

8. Unclamp the band for sanding. It will still be quite flexible. Use a finishing sander and 120-grit sandpaper on the outside; hand sand the inside.

9. Use a pattern to mark the profile fingers on the inside of the overlapping end (Fig. D). Twist the band apart to separate the overlap for marking.

10. Cut the finger profiles on a scroll saw (**Photo 5**). Then use an xacto knife to bevel the fingers' edges and a V-tool to add the decorative grooves. Sand well.

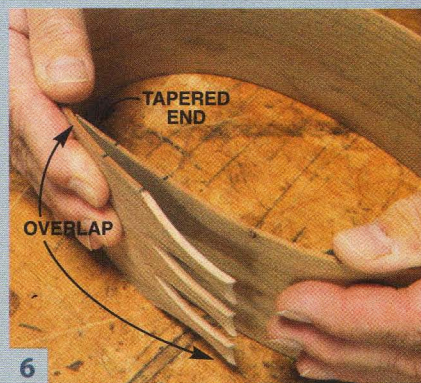
11. Bend the band back together, using your alignment marks (**Photo 6**). Then mark the tapered end of the band on the inside of the overlap. This mark tells you where to start spreading the glue. Apply the glue sparingly to



4 **Complete the bend.** Place a caul over the overlap and clamp the band. Pencil a pair of alignment marks at the overlap. Allow the clamped band to dry for three days.



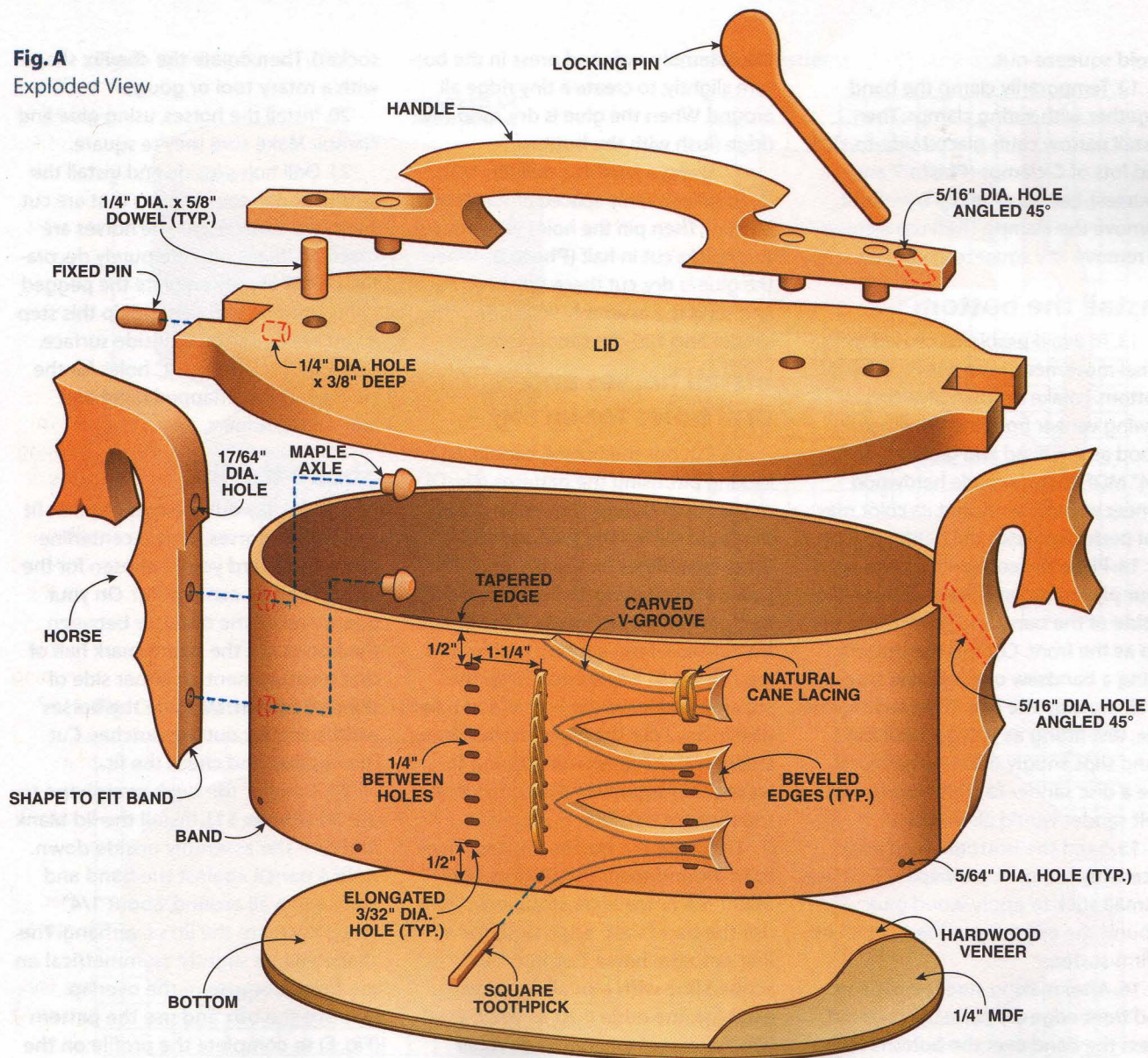
5 **Mark and cut out the fingers.** The band flexes enough to bend out of the way. After sawing the fingers, bevel their edges and carve the V-grooves.

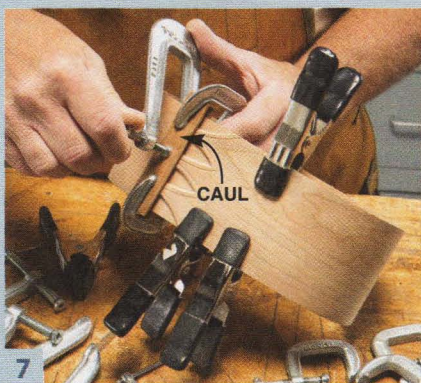


6 **Use the alignment marks** to determine the bend. Then mark the tapered end's location on the overlap. Spread a thin layer of glue on the overlap, from the location mark you've just drawn, to the fingers.

Fig. A

Exploded View

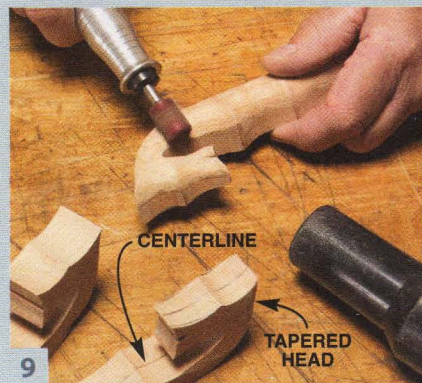




7 **Glue the band together.** Use spring clamps first. Then install narrow cauls and C-clamps. Start at the fingers and work back to the tapered end, placing the cauls side-to-side and removing the spring clamps as you go.



8 **Pin the bottom** with square toothpicks cut in half. Dip the tip of each toothpick in glue before tapping it in place.



9 **Shape the horses** with a rotary tool, after drawing lines down the center of each blank and tapering the heads by sanding. In the old days, carving would have been done by hand with knives and rasps.

avoid squeeze-out.

12. Temporarily clamp the band together with spring clamps. Then install narrow cauls placed side-to-side and lots of C-clamps (**Photo 7** and Sources). Let the glue dry overnight. Remove the clamps. Then use a chisel to remove any squeezed out glue.

Install the bottom

13. To avoid problems caused by seasonal movement, I use plywood for the bottom. I make my own plywood by sawing veneer from the same hardwood as the band and gluing it onto 1/4" MDF. Factory-made hardwood veneer will also work, but its color may not perfectly match the band.

14. Place the completed band on your plywood blank. Trace around the inside of the band and mark the overlap as the front. Cut out the bottom, using a bandsaw or scroll saw, staying 1/16" outside the line. Then sand to the line, test fitting as you go, until the band slips snugly over the bottom. I use a disc sander for this step, but a belt sander would also work.

15. Sand the bottom's hardwood face with 180 grit sandpaper. Then use a small stick to apply wood glue around the edge. Place the bottom on a firm surface.

16. After making sure the overlap and front edge are correctly oriented, press the band over the bottom. Turn

the assembly over and press in the bottom slightly, to create a tiny ridge all around. When the glue is dry, sand the ridge flush with the bottom.

17. Using a 5/64" bit, drill ten 1/2" deep holes evenly spaced around the bottom. Then pin the holes with square toothpicks cut in half (**Photo 8**). When the glue is dry, cut these tiny pegs flush and sand the assembly with a finishing sander and 120-grit sandpaper.

Install horses and drill holes for lacing

18. Cut out the horses, handle, and locking pin, using the patterns (Fig. D) or your own design. Use a disc or belt sander to flatten the joint surfaces. Draw centerlines on the blanks to guide your shaping. Use a disc sander to taper the horses' heads. Then shape the horses—I use a rotary tool for this job (**Photo 9**). Sometimes I skip the shaping and leave the horses and handle square. I cut the pieces from thinner stock (1/2" thick) when I'm going to leave them square, so they don't look too massive (see Tine H, page 46).

19. Shape the horses' joint surfaces to fit around the band (**Photo 10**). Stand the horse against the box. Then use the band's top edge to scribe a line onto the horse. Cut into this scribed line with a small chisel to establish the edge (just as you'd establish the end of a handcut dovetail

socket). Then create the convex shape with a rotary tool or gouge.

20. Install the horses, using glue and clamps. Make sure they're square.

21. Drill holes inside and install the pins (wooden toy car axles that are cut short, see Sources). As the horses are glued on, these pins are purely decorative—they simply emulate the pegged joints used on early tines. Skip this step if you prefer a smooth inside surface.

22. Drill rows of 3/32" holes for the lacing in the overlapped band and around the fingers.

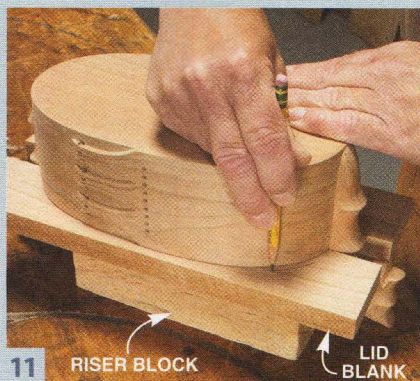
Shape the lid

23. First, lay out the notches that fit around the horses. Mark a centerline down the board you've chosen for the lid and find its centerpoint. On your box, measure the distance between the horses. On the board, mark half of that measurement on either side of the centerpoint. Measure the horses' widths and lay out the notches. Cut the notches and check the fit.

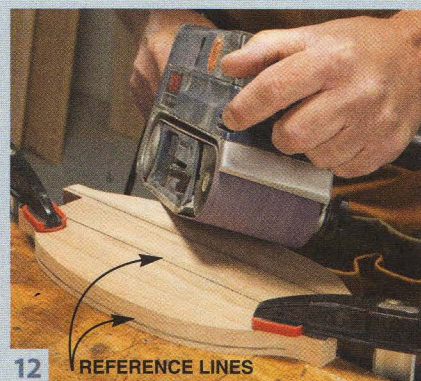
24. Transfer the box's oval shape to the lid (**Photo 11**). Install the lid blank and turn the assembly upside down. Hold a pencil against the band and trace a line all around, about 1/4" away, to create the lid's overhang. The shape will be slightly asymmetrical on the front, because of the overlap. Remove the box and use the pattern (Fig. E) to complete the profile on the



10 Contour the horses' backs to fit the curved tine. Then glue them on.



11 RISER BLOCK LID BLANK
Scribe the lid's overhang after notching the blank to fit around the horses. A riser block provides clearance for the horse heads.



12 REFERENCE LINES
Shape the lid with a belt sander, using reference lines on the top and edges as guides.

Fig. B Bending Form

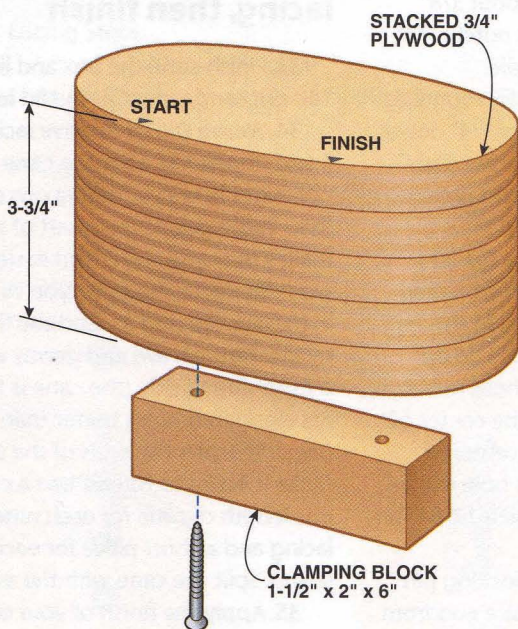


Fig. D Patterns

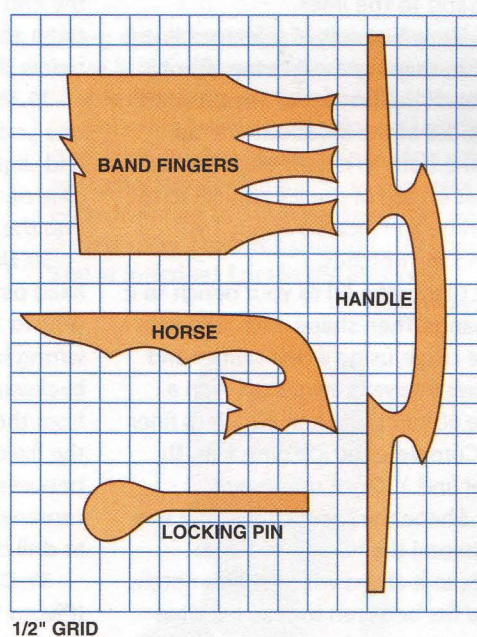


Fig. C Oval Pattern for Bending Form

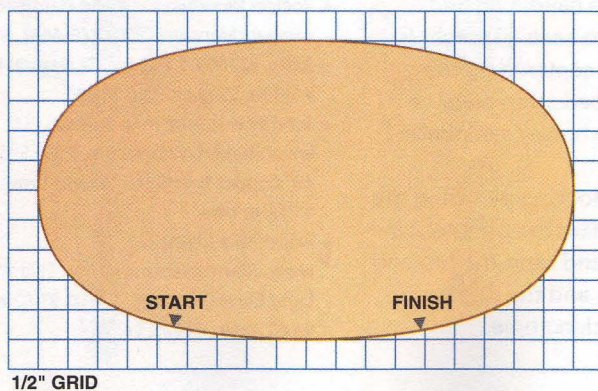
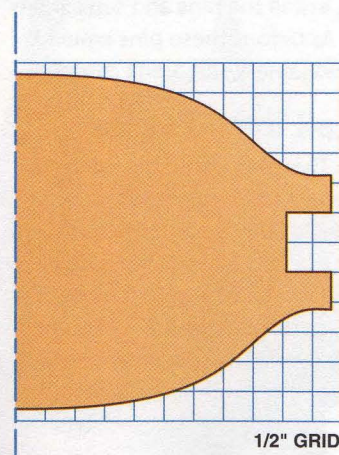


Fig. E
Lid End Profile

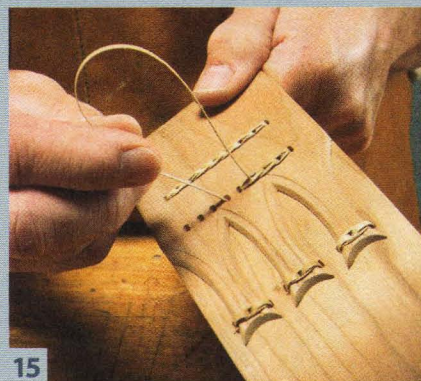




13 **Two pins fasten the lid.** Drill a slightly oversized, stopped hole in one horse to index a fixed pin installed in one end of the lid.



14 **On the other end,** drill an angled hole through the lid and the horse for the locking pin. A sacrificial block shaped to fit the horse minimizes blowout.



15 **Weave the lacing.** In the days before wood glue, tinsmiths used lacing made from tree roots to hold the band together. My lacing is decorative, so I use natural cane, which is readily available and easier to weave.

ends of the lid. Rough cut the lid and then sand to the lines.

25. Draw two sets of reference lines to guide shaping the lid's top (**Photo 12**). Pencil the first set of lines around both sides of the lid, about 1/8" up from the bottom edge. Pencil the second set on top of the lid, parallel to the centerline and located about 1/4" beyond the notches.

26. Clamp the lid to your bench so it overhangs. Then shape each side with a gentle curve, using a belt sander and the lines you've drawn. Start with a coarse 60-grit belt, then switch to finer grits. Complete the job with a finish sander and 120 grit sandpaper.

27. Shape the handle the same way you shaped the horses. Trim it to length, so it aligns with the lid's notches and fits between the horses. Glue the handle onto the lid. Then drill 1/4" holes, install the pins and sand them flush. As before, these pins emulate pegged joinery, but aren't essential.

Install the lid's pins

28. Two pins fasten the lid to the box; one is fixed, the other is removable. Install the fixed pin first. Place the lid on the box. Make sure it lays flat all around the band and that its front (asymmetrical) edge coincides with the band's overlap. Mark one end of the lid; mark the horse at that end, too.

Remove the lid and drill a 1/4" hole in the end you've marked, about 3/8" deep and centered in the notch, 1/2" below the top of the handle.

29. Make the fixed pin by rounding one end of a 5/8" length of 1/4" dowel and slightly tapering the other. Dab glue on the tapered end and press it into the hole.

30. Drill a hole to house the lid's fixed pin in the horse you've marked (**Photo 13**). Be careful: Drill in the wrong horse and the lid will go on backwards. To locate the hole, measure from the lid's bottom to the center of the fixed pin. If the pin is centered between the notches, the hole will be centered on the horse. Use a 17/64" bit to drill the hole.

31. Drill a hole for the locking pin (**Photo 14**). On the opposite end from the fixed pin, mark a hole centered on the handle, 1/2" from the end. Using a 5/16" brad point bit, drill a hole angled at 45° through the handle, lid and horse. Be careful to keep a straight line, so the exit hole is centered on the horse. Hold a shaped scrap piece or dowel against the horse to minimize blowout.

32. Shape the locking pin using the pattern (Fig. D). Mark the pin's centerline. Then shape and sand the top end to fit your fingers and the narrow shaft to fit the locking hole.

Add the decorative lacing, then finish

33. Finish-sand the box and lid, using 180-grit sandpaper. Set the lid aside.

34. Weave the decorative lacing (Fig. F and **Photo 15**). Soak the cane overnight in water; adding glycerin (two tablespoons per quart of water) makes the cane softer and easier to work. Elongate the holes you've drilled in the overlap and around the fingers by inserting an awl and gently working it from side to side (the cane is flat, so it fits elongated holes better than round ones). Sharpen the ends of the cane to make it easier to thread. Use a continuous length of cane for each nine-hole lacing and a short piece for each finger lacing. Split the cane with the awl.

35. Apply the finish of your choice. I wipe on several coats of oil finish.

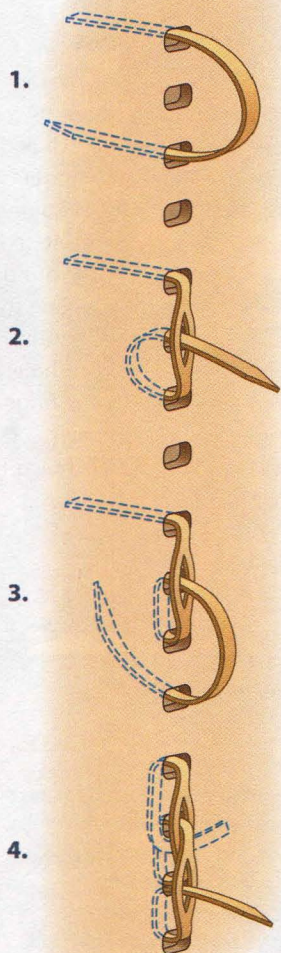
SOURCES

- ◆ Rockler Woodworking and Hardware, www.rockler.com, (800) 279-4441, Maple Axles, #21691, \$1.09 for 10; Natural Fine Cane #41152, \$30 per 1000 ft. roll.
- ◆ John Wilson and John Kellogg, LLC, www.ShakerOvalBox.com, (517) 543-5325, 48" Copper Tray, \$175; Square Toothpicks, \$.75 per box.
- ◆ Adjustable Clamp Co., www.adjustableclamp.com, (312) 666-0640, Light Duty C-Clamps, #1410, \$1.82 ea.; #1413, \$4.62 each.; #1423, \$6.35.

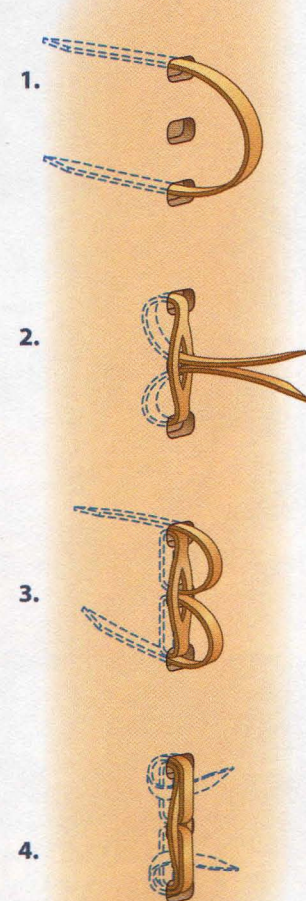


Fig. F Lacing Steps

Single Loop for Band



Double Loop for Fingers



Being downsized from my career in computer building gave me a chance to return to woodworking, my first love. My interest began when I was a kid exploring building sites with my dad. Making tines connects me to my Norwegian heritage. Each tine I make is meant to be an heirloom. My work is on display at www.bendingboxes.com and at juried art fairs in the Midwest.

Jim Anderson



Tines of All Shapes and Sizes

NORWEGIAN ARTISANS made tines one at a time to meet specific needs. Shaker box makers used a set style and

sizing system for their oval boxes and sold them all over the world. My tines combine elements from both traditions. I make them one at a time, and I make them in several styles and sizes, using my own numbering system. Notice that tine B uses a different

method for attaching the lid. Snap tines have two fixed pins in the lid, which is held in place by friction between the pins and the decorative ends. To open these tines, you push one end of the lid against the opposite end of the box, and lift. 



- A. Norseman tine. Cherry and maple burl.
- B. #5 Fjord horse snap tine. Birdseye maple and maple burl.
- C. Oseberg tray. Walnut, maple and cucumber magnolia.
- D. #4 Fjord horse tine. Walnut and cucumber magnolia.
- E. Sugar box tine. Birdseye maple and maple burl.
- F. #3 Fjord horse tine. Cherry and maple burl.
- G. #4 Fjord horse tine. Birdseye maple and maple burl.
- H. #2 Fjord horse tine. Birdseye maple and spalted maple.

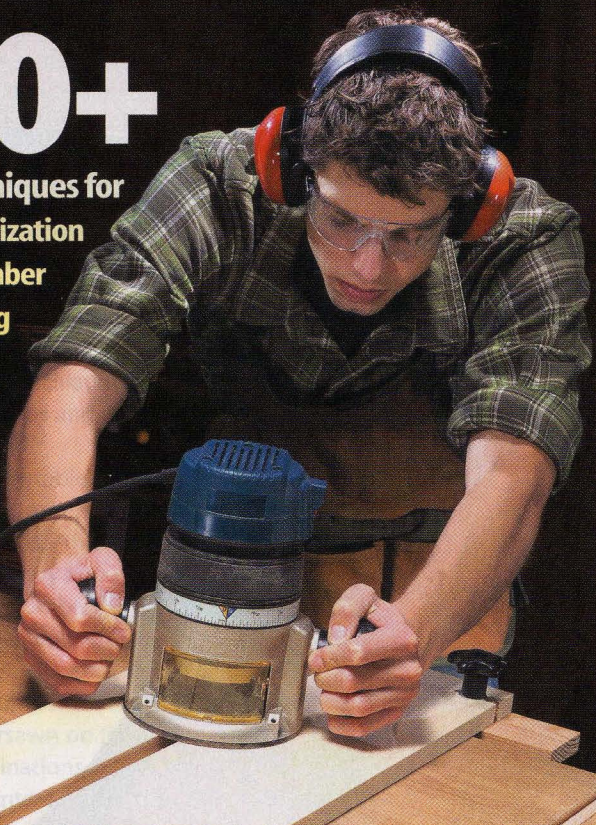
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Build a classic from
the Arts & Crafts era

By Seth Keller

Mission Oak Dining Table



I JUMPED AT THE CHANCE to examine an original Stickley Brothers Company dining table, because I love figuring out how to build antique furniture pieces that I admire. The original version of this table appears in the 1914 Stickley Brothers Quaint Furniture catalog as model #2670, available in 48" and 54" dia. sizes.

My version is nearly identical to the original, but only a woodworker would notice the differences: The original aprons were steam-bent; mine are bent-laminated. The original table stands on casters. I skipped the casters and slightly increased the pedestal's height to compensate. Also, the extension hardware is slightly different (and, I dare say, better). Beyond those changes, all the dimensions match the original: I used the same lumber, quartersawn white oak, and all the joints are connected with very thin splines, as they are on the original table.

Building this table is a big endeavor, and it requires a well-equipped shop. You'll need a jointer and planer, a table saw, a bandsaw, a router table and a router, a drill press, an oscillating spindle sander, lots of clamps and a large, flat work surface.

Like the original, my table is made of 13/16" thick boards, except for the feet. Unless you find extra-thick 4/4 rough lumber, plan to buy about 75 bd. ft. of 5/4 quartersawn lumber for the top, leaves, apron faces, column and corbels. In addition, you'll need 30 bd. ft. of 8/4 plainsawn lumber for the feet (which aren't quartersawn on the original table), apron laminations, mounting boards, and splines. Interestingly, the leaves supplied with original Stickley Brothers tables were not always made of quartersawn lumber, and they didn't have aprons attached. My leaves are quartersawn.

A Tiger and a Bear

Quartersawn white oak was favored by Stickley and other period builders for its strength, durability and stability. Another timeless virtue is its appear-

ance. Quartersawn white oak boards often show spectacular figure similar to a tiger's stripes (in fact, it's sometimes called "tiger oak").

However, quartersawn white oak boards can also vary greatly in appearance from board to board—and even within the same board. The figure can vary from awesome to virtually nonexistent! These traits make quartersawn white oak a bear to work with.

Take your time at the lumberyard to find boards with similar color and figure. This job is easier if the boards have been lightly planed (called "hit-and-miss"). If you purchase rough lumber, the first step is to lightly plane each board to reveal its color and figure. Just skin off the rough surfaces; remove as little thickness as possible.

Now divide the boards according to their visibility as parts of the table (Fig. A, page 50, and Cutting List, page 51). Choose boards for the top first—your best-looking and best-matching boards (**Photo 1**). You'll also need good-looking pieces for the outside laminations on the aprons and corbels. Use the less attractive pieces for the pedestal column and for the inside apron and corbel laminations.

Start with the pedestal corbels

1. Each corbel (A) consists of three 13/16" thick laminations. Plan to glue up six 13" by 16" blanks—this size allows each blank to contain two corbel laminations. Use random width pieces for each blank, so the splines will be staggered when the laminations are glued together.

2. Using your router table, rout thin, shallow grooves for

splines on the edges of all the pieces (**Photo 2**). Set the fence to cut 1/4" deep and install a 1/16" slot cutting bit (see Sources, page 55). Set the bit's height to center the slots. Save this setup; splined joints are used throughout the table.

3. Rip 1/16" thick splines (B) from a 1/2" thick by 50" long white oak blank on your bandsaw or tablesaw. Install a zero-clearance throat plate insert and use a push stick. Test-fit the splines. They should slip in the grooves with enough play for a piece of paper in both width and length. Once you've got the setup, make all the splines necessary to complete the table.

4. Glue up the corbel lamination blanks. They must be absolutely flat. (**Photo 3**).

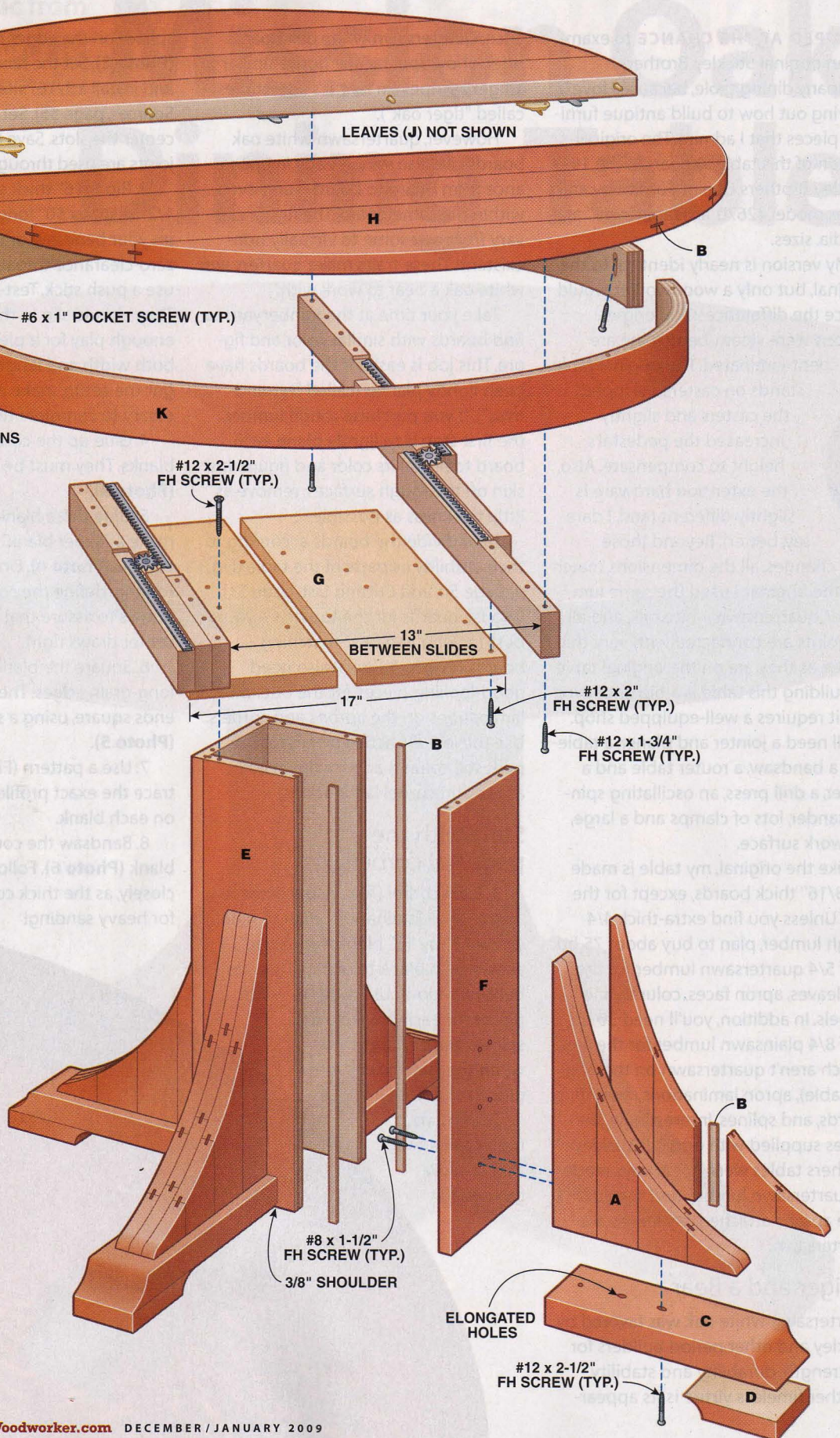
5. Glue three blanks together to make a "super blank" that will yield two corbels (**Photo 4**). Draw dotted lines to roughly define the corbels. Then drive screws to assure that the superblank's center draws tight.

6. Square the blank. First, joint the long-grain edges. Then crosscut the ends square, using a shop-made sled (**Photo 5**).

7. Use a pattern (Fig. B, page 53) to trace the exact profile of two corbels on each blank.

8. Bandsaw the corbels from the blank (**Photo 6**). Follow the line very closely, as the thick corbel makes for heavy sanding!

Fig. A Exploded View





1

This table is built with quartersawn white oak. Dampen your pieces with mineral spirits to see how they'll look when they're finished. Set aside boards with the best match of color, tone and figure for the table's top.



2

The joints in this table feature thin splines, just like the original Stickley Brothers table. Splines strengthen the joints and make alignment during glue-up a breeze.

9. Smooth the corbel's curved section with an oscillating spindle sander.

10. Rout a 1/8" radius roundover on the curved edges of each corbel and then sand each assembly smooth.

Attach the corbels to the feet

11. Cut blanks for the feet (C) from plainsawn 8/4 stock milled to 1-1/2" thickness. Mill another piece to 1" thickness for the pads (D). Glue a pad to each foot blank.

12. Use a pattern (Fig. B) to draw the profiles on each foot. Rough cut the profiles on the bandsaw. Then sand to the pattern lines. Rout a 1/8" radius roundover on the outside edges. Then sand each foot smooth.

13. Fasten the feet to the corbels. To make sure their back edges are flush, lay each corbel long-grain edge down on your workbench and butt the foot against it. Clamp the corbel to the bench and the foot to the corbel, using a clamping block made from the curved corbel offcut. Drill shank and pilot holes for the screws. Remove the foot and elongate the two shank holes farthest

from the column, to allow for the corbel's seasonal movement.

14. Starting at the column end of the foot, squeeze a 4" long bead of glue down the center (don't glue the corbel full-length). Re-clamp the foot to the corbel and drive the screws.

Assemble the pedestal

15. Cut the column sides and ends (E and F) to final dimensions. Then rout slots for the splines on the edges of the sides and on the inside faces of the ends.

16. Fasten the foot/corbel assemblies to the column pieces, using a 1" thick gauge block with a 3/8" deep rabbet for positioning (Photo 7). Clamp the pieces together, using the same

curved clamping block you used earlier. Drill shank and pilot holes for the screws. You don't have to elongate any of the shank holes for this long-grain joint. Remove the clamps. Apply glue to the back edge of the corbel. Re-clamp the joint and drive the screws. Remove any glue that squeezes out.

17. Glue the four foot/corbel/column assemblies together on a large flat surface, using a 5/8" thick gauge block for support (Photo 8). Use the top of your tablesaw if your bench is too small.

18. Round over any remaining sharp edges and finish-sand the pedestal.

19. Install the mounting boards (G). They run diagonally and are centered on the column.

CUTTING LIST MISSION OAK DINING TABLE

Overall Dimension: 48" Dia. x 30-1/4" H

PART	NAME	QTY.	MATERIAL	ROUGH DIMENSION	FINAL DIMENSION
A	Corbel	4	QS* White Oak	2-7/16" x 13" x 16"***	2-3/8" x 12" x 15"
B	Spline	32	White Oak		1/16" x 1/2" x 50"
C	Foot	4	White Oak		1-1/2" x 4" x 15"
D	Pad	4	White Oak		1" x 4" x 5"
E	Column Side	2	QS White Oak		13/16" x 6-3/8" x 25-1/4"
F	Column End	2	QS White Oak		13/16" x 8" x 25-1/4"
G	Mounting Board	2	Hardwood		1" x 7-3/4" x 35"
H	Top Half	2	QS White Oak	1" x 25" x 50"	13/16" x 24" x 48"
J	Leaf	3	QS White Oak		13/16" x 12" x 48"
K	Apron	2***	White Oak****	3/32" x 3-1/4" x 78"	3/4" x 3" x 22" inside rad.

* Quartersawn.

** This blank contains 2 corbels. Its 2-7/16" thickness is achieved by stacking and gluing three 13/16" x 13" x 16" pieces.

*** Each apron is made up of eight 3/32" thick laminations glued over a form (16 laminations required; see Rough Dimensions).

**** Outer two laminations are quartersawn."

Build the top in two half-round sections

20. Glue up two blanks, one for each half of the top (H). Assemble all of the joints with thin splines. Remove squeezed out glue.

21. Joint one edge of each half of the top (**Photo 9**). If the blank is too large to handle on your jointer, use a straightedge and a router equipped with a flush-trim bit.

22. Make a half-round 24" rad. (48" dia.) MDF template for shaping the top halves. Use the template to mark each blank and rough saw them slightly oversize. Screw the template to the bottom face of each blank, flush with the blank's jointed edge. Clamp the assembly so it overhangs the edge of your bench, with the template on top.

23. Shape the half-round edge of

each blank in two passes, using a pattern bit with top- and bottom-mounted bearings (see Sources). Set the bit's top bearing to ride against the template. Start at the apex of the arc and rout counterclockwise to the end, following the grain (**Photo 10**).

24. Un-clamp the assembly, flip it over and re-clamp it as before. Adjust your router bit so the bottom bearing rides on the template and rout the remainder of the curve as before, starting at the apex and routing counterclockwise (**Photo 11**).

25. Glue up the three leaf blanks (J). Cut them to width and joint the edges. Then square the ends.

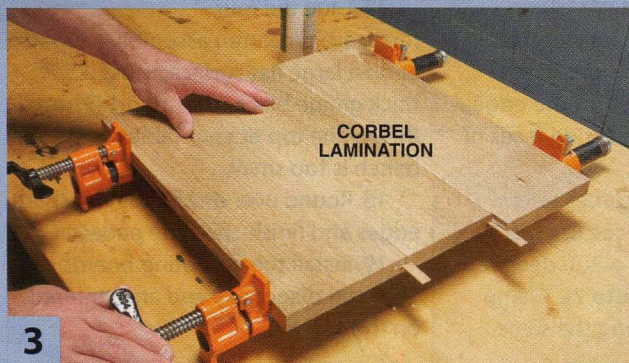
26. Make the jig for drilling holes for the table pins and grommets (Fig. C, p. 54). The jig must allow drilling from both sides, so bore the holes in the jig's

rail on the drill press to assure they're perpendicular.

27. Clamp the jig to the edge of each top half and bore the holes (**Photo 12**). Be sure to orient the jig from the same end of each half, so the holes align properly. Drill holes in the leaves, too.

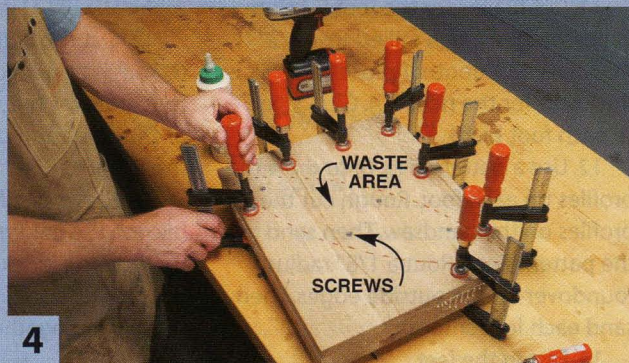
Laminate the apron halves

28. Make a bending form and clamping cauls for the aprons (K) by stacking and screwing four pieces of 3/4" MDF. Cut the bending form to a half-round shape with a 22" radius. Make five clamping cauls with 22-1/2" inside radii. I prefer segmented cauls because they are easier to position and manipulate than a two-part form. Screw on rabbeted stays to keep the laminations from sliding upwards. Align the bending form and clamping cauls



3

Start by gluing up laminations for the corbels. The corbels are the thick, curved pieces on the pedestal that connect the feet to the column. Each corbel contains three laminations.



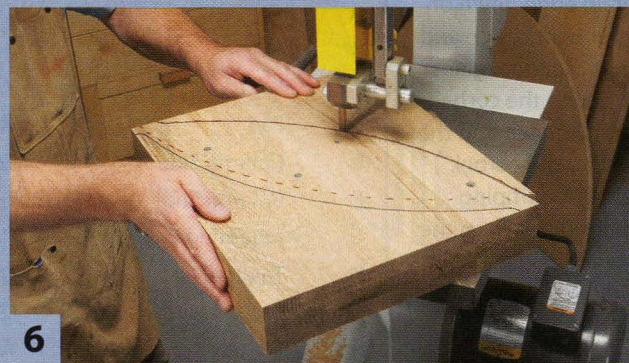
4

Glue three laminations together to create a blank that contains two corbels. Drive screws in the waste area between the two corbels to clamp the center. Then clamp the perimeter.



5

Square two opposite corners of each corbel blank. Crosscut the ends after you've jointed both long-grain edges. A sled makes the large blank easier to handle and cut accurately.



6

Saw out each corbel slightly oversize. Then sand to the line with an oscillating spindle sander or a sanding drum mounted in your drill press.

and bore holes for optimal clamp placement. Wrap the form and cauls in plastic so they don't stick to the laminations. Wax your benchtop or cover it with waxed paper, for the same reason.

29. Re-saw 3-1/4" wide boards to create the apron laminations (G). Make two laminations from your best quarter-sawn material to dress the outside of each apron. Plane or sand each lamination to 3/32" to remove the saw marks.

30. Dry clamp the laminations in the form to get an idea of how long it might take and to identify the pitfalls that might occur during a glue-up. I recommend using Unibond 800 (a two part liquid urea resin glue) for bent lamination work, because of its long open time and hard set, which helps the lamination keep its shape (see Sources). Mark the center of the dry

laminations and the center of the form to assure a symmetrical glue-up (**Photo 13**).

31. Apply glue to each lamination, stack them and move them to the form. Clamp the center first, and then work your way to the ends. Make sure the laminations are tight—signaled by glue squeeze out—before you move to the next clamp.

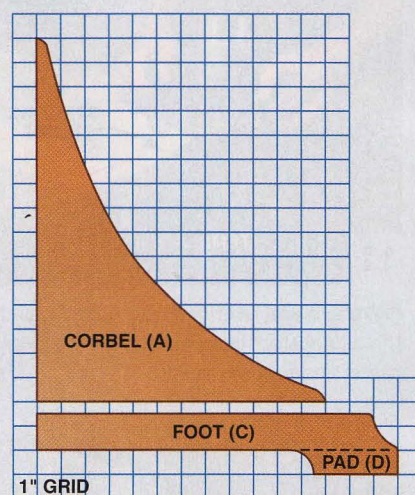
32. After the laminations have tack-set, remove the stays so they don't adhere. Let the glue cure overnight.

33. Remove each laminated apron blank from the form and joint one edge (**Photo 14**).

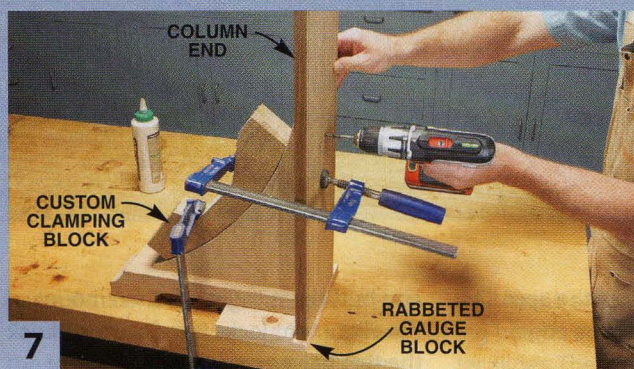
34. Scribe a parallel line 3" from the jointed edge and plane the apron to final width (**Photo 15**).

35. Round over each apron's two bottom edges.

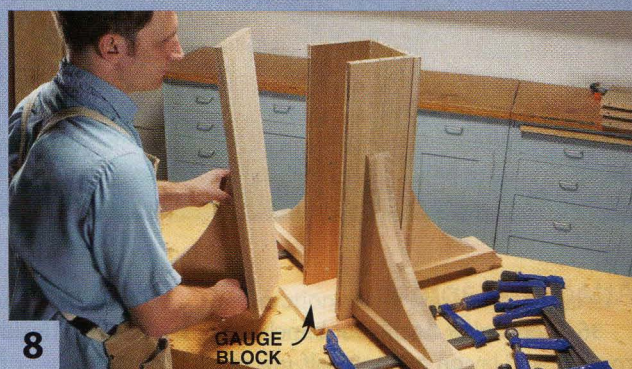
Fig. B Leg & Foot Patterns



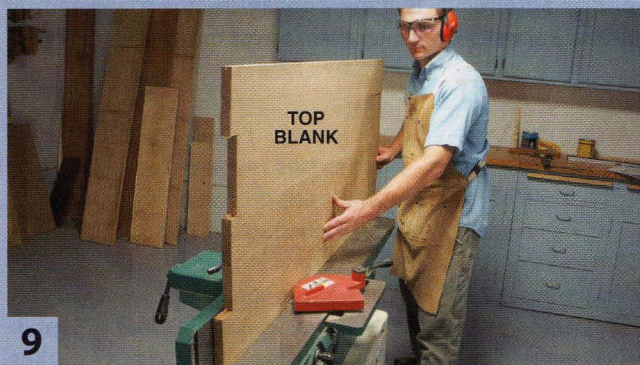
Use a copy machine to enlarge this pattern until each square measures 1" in width and length.



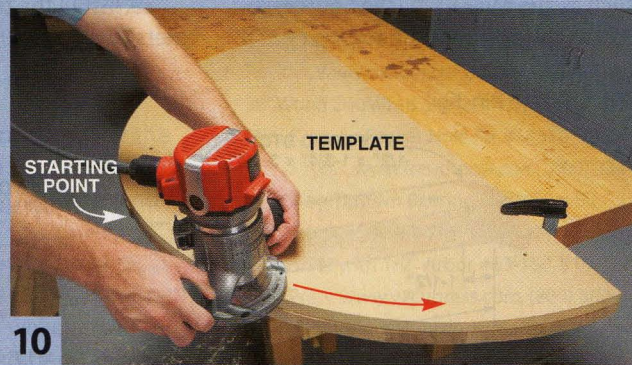
7 Fasten each assembled leg before you glue the column together. A rabbeted gauge block correctly positions the upright. Use a custom clamping block to hold the assembly while you drill and install the screws



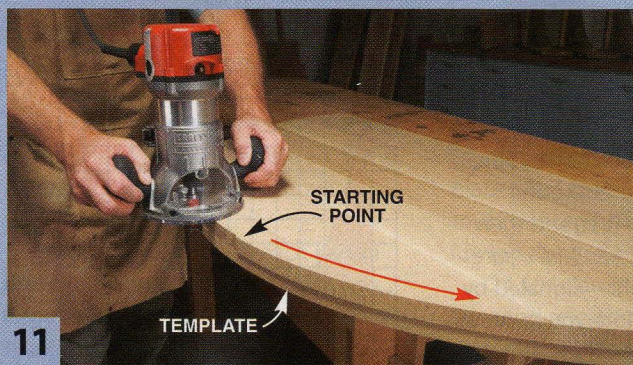
8 Glue the pedestal together on a level surface. A gauge block supports the column at the correct height and automatically aligns all four column pieces.



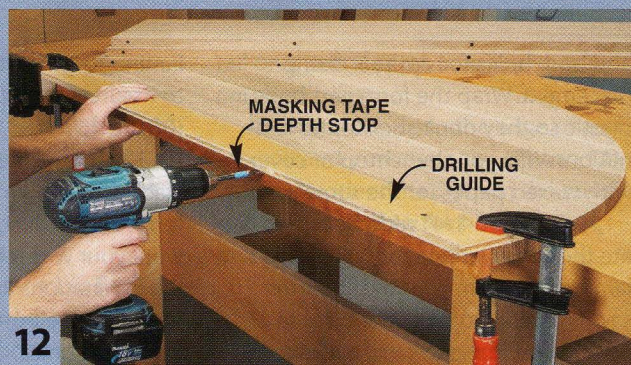
9 Glue up two blanks to make the top, one for each half. Joint the inside edge of each blank.



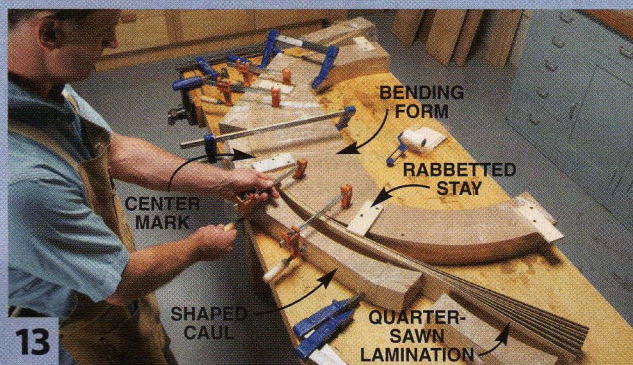
10 Rout each half-round shape in two passes, using a screwed-on template and a flush-trim bit with two bearings to avoid tearout. Start from the center and rout to the end, using the top bearing.



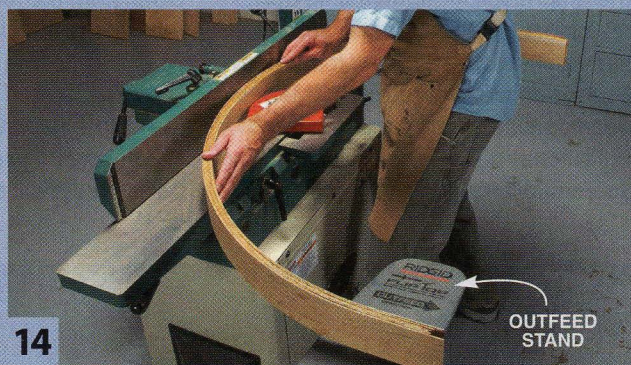
11 Flip the blank over so the template is on the bottom. Then use the bit's bottom bearing to finish the job. As before, start from the center and rout to the end.



12 Drill holes for the table pins with a shop-made guide (see Fig. C, below). The guide assures that all the holes will be perfectly located.



13 Laminate thin pieces around a semi-circular bending form to create the half-round rails. Use a quarter-sawn piece as the outside lamination on each rail. Shaped clamping cauls distribute pressure evenly. Rabbetted stays keep the laminations aligned.



14 Joint one edge of each apron. Make sure the jointer's fence is square. Then hold the apron's outside face flat against the fence as you make the cut. Use an outfeed stand for support.

Attach the aprons

36. Thoroughly clean your bench (or cover it) and lay on one top half, upside down. Scribe an arc 1-1/4" from the outside edge to position the apron. Clamp the apron in five places. Then bore pocket holes, using a pocket jig such as the Mini-Kreg (see Sources). Fasten the apron to the top.

37. Strike lines and saw the apron to length, 1/32" inside the top's edge (**Photo 16**).

38. Attach the remaining apron to the other top half.

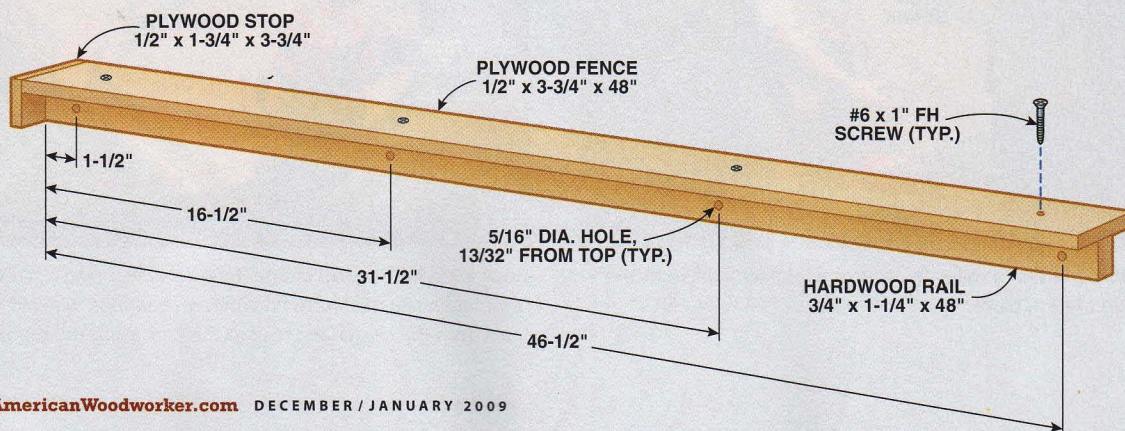
Mount the extension slides

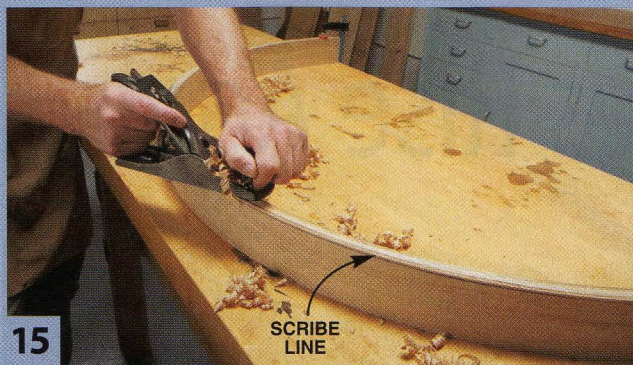
39. Install the table pins and grommets (see Sources) in the top halves

and butt them together. Then mount the alignment locks (see Sources). Lock the two halves together.

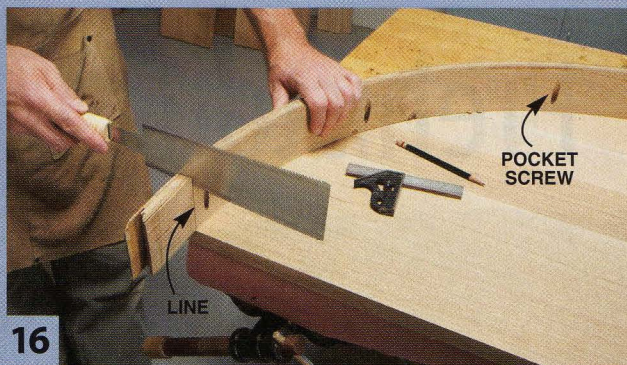
40. Center a 13" wide spacer on the tabletop (**Photo 17**). The spacer assures that the slides will be parallel (a must for smooth operation) and properly spaced. Butt the slides against the spacer and center them across the joint (each set

Fig. C Table Pin Jig

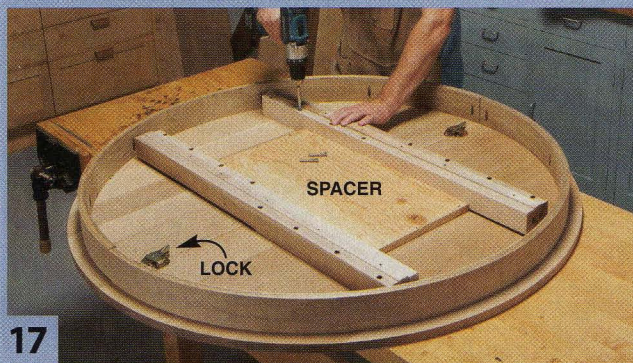




15 **Plane the apron** to final width. Scribe a line and clamp the apron to your workbench. Use a sharp blade and skew the plane for a clean cut.



16 **Cut the apron** to length after fastening it to the top. Strike a line square to the top's edge at each end. Then saw the apron by hand, 1/32" inside the lines.



17 **Install the expansion slides**, using a spacer to keep them parallel. Lock the table halves together before you bore holes and install the screws.



18 **Fasten the pedestal** to the top. Center the pedestal on the top and align its mounting boards with the center rails of the expansion slides. Then drill holes and install the screws.

has right and left hand slides, see Sources). Use the factory holes to mark the top with an awl. Remove the slides and drill pilot holes—use a depth stop so you don't drill through the top! Position the slides and install the screws.

41. Remove the spacer and install flush-mount fasteners, which aid table top alignment (see Sources).

Fasten the top to the pedestal

42. Flip the base over and center the mounting boards on the slides, end-to-end. Align the outside edges of the mounting boards with the outside edges of the center rail of each slide (**Photo 18**). You may want to enlist a friend for this step, as the base is very heavy!

43. Fasten the pedestal to the top:

Drill shank holes through the mounting boards and pilot holes into the center slides. Then install the screws.

44. Flip the assembled table over (now you'll really need help from a friend). Undo the alignment locks and open the table. Install the pins in the leaves (make sure they go in the correct edge) and install the leaves.

The big finish

45. Rout a 1/8" roundover all of the remaining sharp edges.

46. Finish-sand the top, apron and the leaves.

47. Apply the finish of your choice. For authenticity, I chose the finish Kevin Southwick developed while restoring the original Stickley Brothers table that I used to pattern this one. To see Kevin's recipe—and the story of his expert

restoration of the original table, go to www.americanwoodworker.com/table restoration.

SOURCES

- ◆ **Woodcraft Supply**, www.woodcraft.com, (800) 225-1153, Align-N-Lock, #124295, \$3.50; Flush Mount Fasteners, #130248, \$3.50; Table Pins, #27A30, \$6 (2 packs reqd.).
- ◆ **Rockler**, www.rockler.com, (800) 279-4441, 38" Wood Equalized Slides, #70334, \$63; Mini-Kreg Jig Pocket Hole Kit, #60370, \$20.
- ◆ **Freud Tools**, www.freudtools.com, (800) 334-4107, Top/Bottom Bearing Flush Trim Bit, 1/2" shank, #50-509, \$45; 1/16" Slotting Cutter Set with 1/2" Arbor, #63-150, \$16.
- ◆ **VacuPress**, www.vacupress.com, (800) 382-4109, Unibond 800 Resin w/Medium Catalyst, #UB-1(M), \$39 per gal. 

Prehistoric Trees Rise Again



Extracting the ancient Kauri logs—some weighing as much as 140 tons—requires massive amounts of machinery, know-how and manpower.

The bogs of New Zealand yield awesome Kauri logs.

By Spike Carlsen

AS I DRIVE TOWARD Ashland, Wisconsin—home of the company that lays claim to selling the oldest workable wood on the planet—the convoys of fully-loaded pulpwood trucks I pass remind me of the rich, ongoing logging tradition of the area. It's a fitting place for a company named Ancientwood to call home. I find the pole building that serves as the warehouse/store/Internet headquarters, and find owner, Bob Teisberg. He greets me by making three introductions: The first is to his shop helper, Dante; the second is to a mammoth slab of Kauri wood standing by the door; the third is to his sense of humor. "Yep, we call that slab Dante's

Inferno. He went through hell for two straight weeks sanding and finishing that baby. But just look at it." And when you look closely at this gigantic slab, you set your eyes on things of an unworldly nature. For starters, it's 5 feet wide, 7 feet tall and three inches thick. It's sanded smooth as glass with a finish and grain that not only glow but dance like a hologram based on your viewing angle. The color, figure and texture are unlike any wood I've ever seen. And the reason is, it is a wood I've never seen. It's a wood most people have never seen. The slab is from a 50,000-year old Kauri tree, mined from the bogs of New Zealand.

The route a slab of wood needs to travel to get from 48,000 B.C. on the North Island of New Zealand to today in Ashland, Wisconsin is not an easy, inexpensive or clean one. "Originally we thought some cataclysmic event—a tsunami, an earthquake, an asteroid—was responsible for the death of the

trees," explains Teisberg, the North American distributor for Ancient Kauri Kingdom wood. "But when they sent samples to the University of New Zealand for study, they found the trees died at different times, and fell in different directions, so our best guess is they died of natural causes." But it doesn't matter so much how they died as where and when they died. When most trees die, they keel over and decompose within a few decades. But these Kauri trees keeled over into bogs, an oxygen-starved, fungus-free environment, that created a time-warp cocoon that preserved the timber in pristine condition—until a Kiwi by the name of David Stewart happened along.

The Ancient Kauri Kingdom's informational DVD, in which Stewart stars, shows the process used to extract the trees. Most of the trees are found in farm pastures where they reveal their presence by a small exposed section. "If you're a farmer you really don't want these things in your field," explains Teisberg. "Nothing grows on them and animals can break a

From the book *A SPLINTERED HISTORY OF WOOD* by Spike Carlsen. Copyright © 2008 by Spike Carlsen. Reprinted by permission of Collins, an Imprint of HarperCollins Publishers.



leg if they fall through a rot pocket, so they're just a nuisance."When they go into an area they're never quite sure what condition or size the trees will be in; there's really nothing scientific about it. They get in there with a backhoe, give the exposed part a wiggle and if the land 100 feet around them moves they know they've got a monster. And they've found some monsters.

The extraction process involves moving man and machine across the boggy land, trenching all around the log, then using a chainsaw with a bar the length and lethality of an alligator to cut the log in two if it's too large to get out in one piece. The video of the process, which absolutely oozes testosterone, shows a cigarette-chomping Stewart, covered in slime, standing in the bucket of the backhoe, sawing a 60,000 pound monster in two with a chainsaw sporting a 6 foot long bar. There are hydraulics, chains, cables, muck and heavy machinery everywhere. The wood chips flying out of the kerf look as clean and uniform as if he were slicing through a 25-year

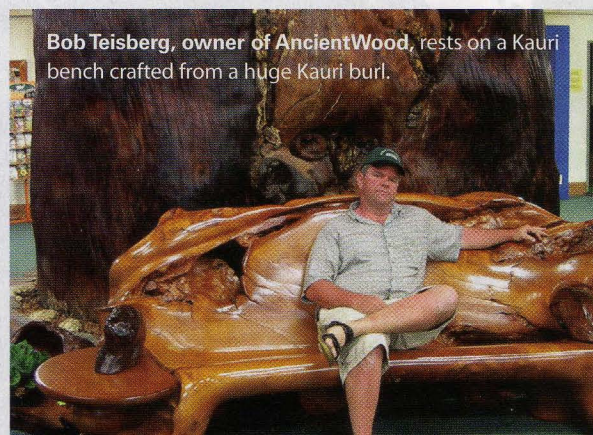


old birch tree. At one point he pauses to show the camera a handful of 45,000-year old Kauri leaves.

Once the sections are cut to manageable size, they're winched, pushed and pulled up out of the trench; rolled onto massive flat bed trucks, then hauled to the company's yard where they're marked and cut into slabs. The logs have reached the 100% saturation point after lying in the bogs for eons, and the drying process is a long, drawn out affair as the wood finds a new moisture balance.

The crown prince of Kauri logs is the 140-ton "Staircase" log discovered in October of 1994; the largest known log of any

kind, anywhere ever to be extracted. The crew broke two 90-ton capacity winch cables attempting to haul the trunk out in a single piece. They cut the tree into separate 110- and 30-ton sections, hauled the sections out, then let them sit untouched, not wanting to cut the trunk into slabs because of its Olympic-caliber size. Four years later, Stewart built a 20



Bob Teisberg, owner of AncientWood, rests on a Kauri bench crafted from a huge Kauri burl.

inch thick reinforced concrete pad, placed a 50 ton, 12 foot diameter, 17 foot tall section of log on top of it, and went after it with a chainsaw. After three hundred hours of carving and two hundred hours of finish work, the world's largest, and surely oldest, single-piece circular stairway was complete. It's built inside of the log. If you pause to count the growth rings as you're ascending you'll find 1,087 of them.

The scene in Ashland, Wisconsin is considerably tamer. Teisberg walks me past pile after pile, specimen after specimen of imported ancient Kauri. He has everything ranging from 6-foot thick stumps to 1/16th inch thick veneers. Teisberg, at one point, stocked what he touted to be the "largest single piece of wood available in the U.S."—

and I never found any challengers. The slab measured over 20 feet long, 5-1/2 feet wide, 4-1/2 inches thick, was estimated to be 1000 years old and, amazingly, contained not a single knot.

Kauri sells for \$35 per board foot, a price

comparable to that of high-grade teak today. "Teak is beautiful," explains Teisberg, "But you'll find it on every freakin' sailboat made today. If you dig the [Kauri] story and you want something exotic, then you're way in. If not, head to Home Depot."

It's not only boat builders who dig the Kauri story. Scientists are studying the growth rings to get a read on the climate and environment 50,000 years ago. Many of the boards have 50 to 60 growth rings per inch. They have stories to tell.

Fifty-thousand years old is getting on in age for a piece of wood, but scientists are now examining Huon pine logs extracted from an alluvial plain area in the Stanley River Region of Tasmania.

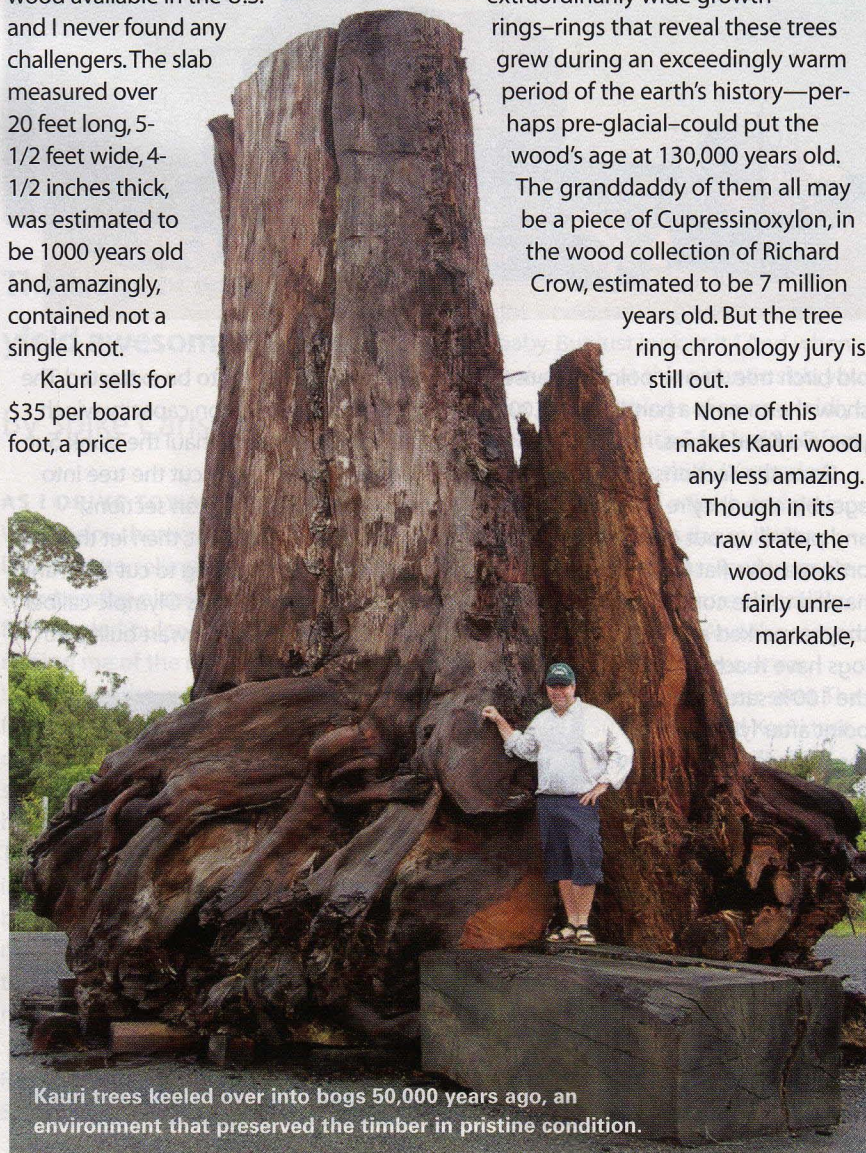
Carbon dating and examination of extraordinarily wide growth rings—rings that reveal these trees grew during an exceedingly warm period of the earth's history—perhaps pre-glacial—could put the wood's age at 130,000 years old. The granddaddy of them all may be a piece of Cupressinoxylon, in the wood collection of Richard Crow, estimated to be 7 million years old. But the tree ring chronology jury is still out.

None of this makes Kauri wood any less amazing. Though in its raw state, the wood looks fairly unremarkable,

it begins emitting its trademark opalescent glow once sanded down to 1200 grit and given a finish. The farther you get down into the base of the trunk and root area, the wilder the grain and figure become. Furniture builders love the stuff, crafting it into both highly machined and natural edge pieces. Turners like turning it wet, letting it dry out—sometimes for as long as two years—then turning it again to final shape and thickness. Musical instrument builders—including those who make guitars, ukuleles, drums, flutes and harps—love both the look and sound. One acoustic guitar maker now uses Kauri exclusively, and electric guitar builders in particular go wild for the boards with the wildest grain. One woodworker/jeweler sells rings turned from ancient Kauri and totes them as keepsakes that connect the wearer to their prehistoric past.

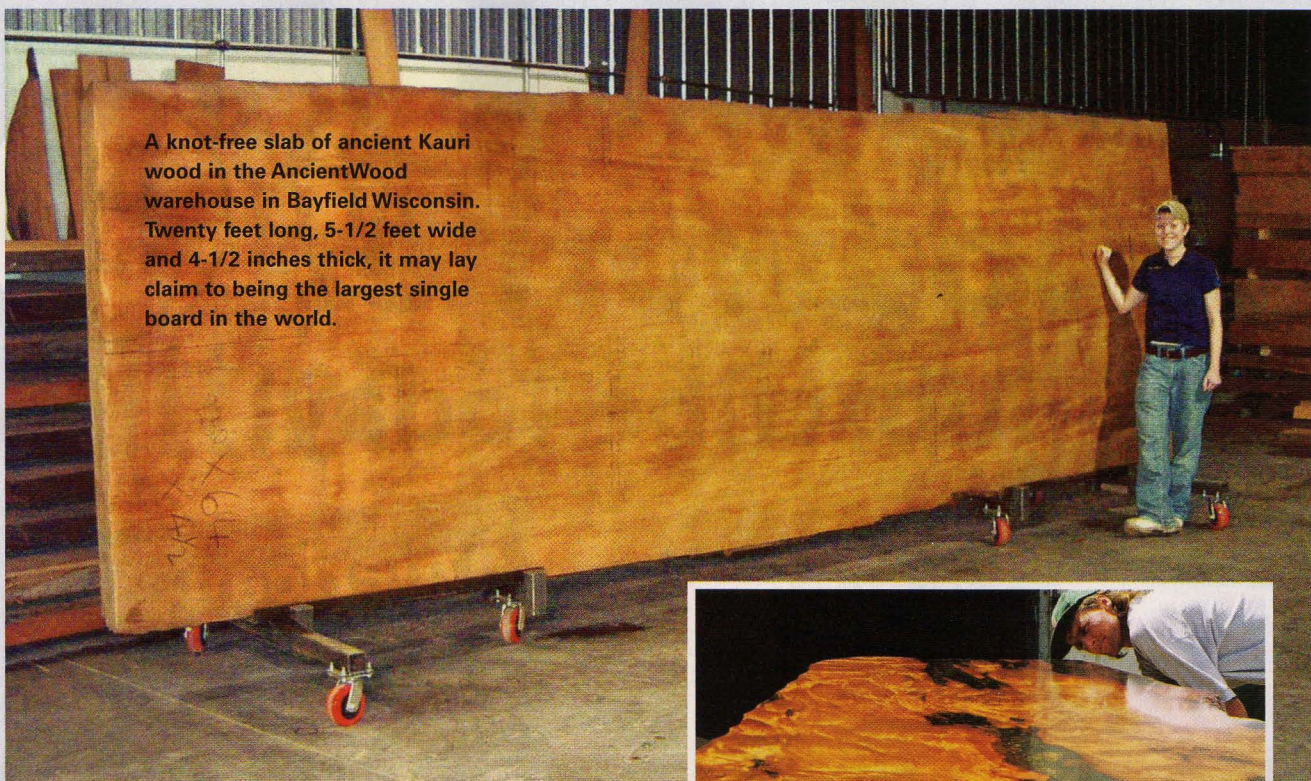
The wildest of the wildest grains is called "white bait," named after schools of small fish near New Zealand that emit an iridescent glow when swimming in one direction, then seem to disappear when changing course. "People ask me to describe white bait over the phone and it really defies description," explains Teisberg. "There's no short description; it's like a confluence of grain activities. I've never seen it in another type of wood. You just sort of have to see it." And when you hold a sanded, polished and finished board of white bait in the sun, you see what he means. It has depth, it shimmers, it plays practical jokes on you depending on how you turn it.

As we head back toward his office, Teisberg picks up a slab of Kauri and tells me to rub my thumb "until it gets hot" over an area of the bark that contains an amber-color residue. "Now close your eyes and smell your thumb," he says. "That's what it smells like to stand in a 50,000 year old forest." He may be right, but the smell is so intense, I feel like I'm standing in a 55-gallon drum of turpentine. The residue on my thumb is the dried sap of the Kauri, which clings to the bark whether the tree is long dead or still growing. In the not too distant past this sap was collected, purified and sent by the boatload to England and



Kauri trees keeled over into bogs 50,000 years ago, an environment that preserved the timber in pristine condition.

A knot-free slab of ancient Kauri wood in the AncientWood warehouse in Bayfield Wisconsin. Twenty feet long, 5-1/2 feet wide and 4-1/2 inches thick, it may lay claim to being the largest single board in the world.



Norway to make linoleum and varnish.

Kauri was to New Zealand what white pines were to North America: massive and abundant trees ready for the taking by early European settlers who harvested them for houses, ship building, furniture and fire wood. When Captain Cook first reported the existence of "the finest timber my eyes have ever seen" in 1769, kauri forest blanketed about 4 million acres of New Zealand's North Island. The trees were massive by any standards. If you were a European carpenter, a single kauri could provide enough wood for six houses. If you were a Maori warrior you could craft one into a 115-foot long war canoe, capable of carrying a crew of eighty.

Some monsters escaped the guillotine; "Tane Mahuta," perhaps the largest Kauri still growing today, measures 45 feet in circumference and stands 170 feet tall. But a tree known as "Kairaru," that was destroyed by fire in the 1880s, was three times the size of Tane Mahuta. When living, it was the largest tree by volume in the world, larger than the largest redwoods today, and was estimated to be over 4,000 years old.

Before leaving I decide to purchase a 3-inch thick, 16 by 24 inch free-form

slab, sliced from the base of an ancient Kauri. I gulp a bit when Teisberg calculates the board feet and the total comes to \$315. But it's a gorgeously entangled slab and, like a fine art lithograph, comes with its own serial number and certificate of authenticity; a certificate that reads in part:



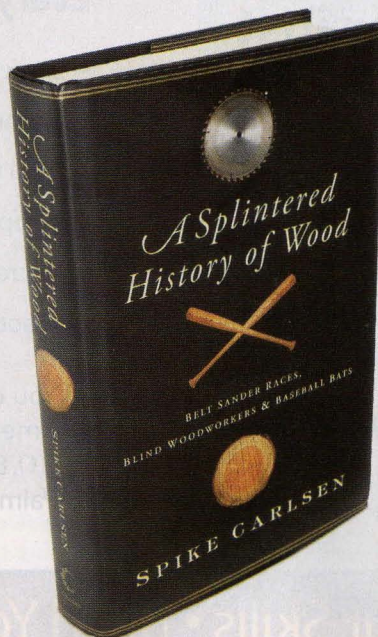
This prehistoric Kauri timber is from the forests buried during the 1st Ice Age, which are located on the Northern Island of New Zealand in the South Pacific Ocean. Our company, Ancientwood, Ltd. is satisfied that extensive and conclusive independent Radio Carbon Dating tests verify this age beyond doubt.

And I think, "For a slab of 50,000 year old wood that's traveled halfway around the world, 315 bucks is a pretty good deal." 🐻

SOURCE

Ancient Kauri wood, Ancientwood, Ltd, Bayfield, WI, www.ancientwood.com, (888) 201-7544, (Visit website for local distributors).

For more information about Kauri, other remarkable woods, and the eccentric people who seek them out, visit **www.asplinteredhistoryofwood.com** The book is available at bookstores, Amazon.com, and other retailers.



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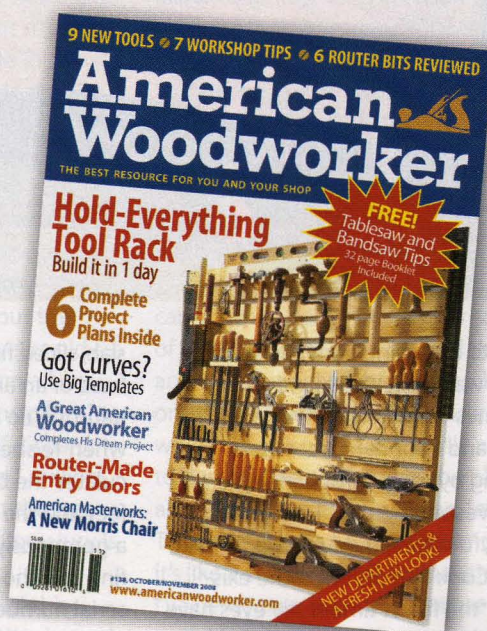
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Build Your Skills • Build Your Shop

Scrap Wood Cutting Boards

Turn trash into treasure.

By Yoav Liberman

I LOVE HARD CHEESES and hard-crust breads. My cheese-making skills are limited and my baking talent is admired only in our household and among close friends, so I use my wood-working skills to make distinctive cutting boards to serve the foods I like.

The secret to my designs is using cast-off lumber, those short cutoffs and deformed pieces that usually get thrown out or burned in the fireplace (Photo 1). I'll demonstrate how I deal with the imperfections that characterize the scrap pieces I use. I'll also explain how to turn a handle that's functional and decorative.

Choose Food-Safe Wood

Maple, beech, cherry and birch are excellent choices. They're hard, close-pored woods that are known to be food-safe. It's a good idea to stay away from tropical woods in general, as many, including rosewood, olivewood and cocobolo, contain known toxins or allergens.





1 I make beautiful cutting boards from gnarly offcuts. Maple, beech, cherry and birch are safe woods to use for serving food.



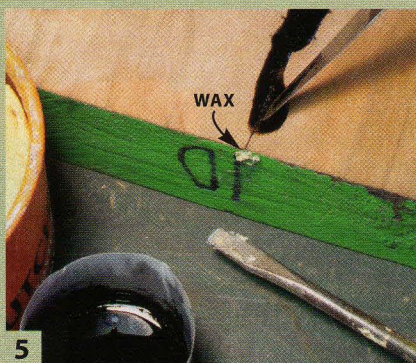
2 Hand plane boards that are too short to flatten with your jointer and planer



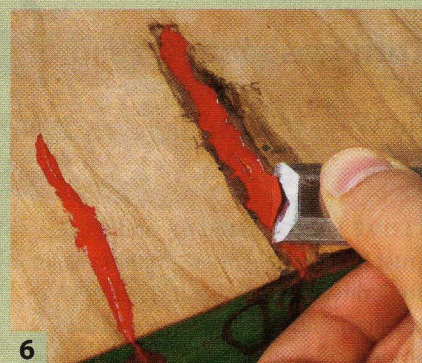
3 Remove decayed or unstable wood using a high-speed rotary tool equipped with a round or pear-shaped bit.



4 Fill cavities with slow-setting epoxy. I mix in artists oil paint to add color. Here I've added ivory black, but I often mix bright colors to create a dramatic effect.



5 Use a thin-bladed spatula to work the epoxy into narrow cracks and crevices. Dab on wax to keep the epoxy from draining out the end of a check.



6 Level the epoxy with the board's surface. To make the job easier, start before the epoxy reaches maximum hardness.

Prepare the Board

Scrap pieces usually need two or three operations: removing bark, flattening the surfaces and filling voids with epoxy. After you remove bark, clean the surface with a brass brush to get rid of grit and other loose material. Then sand.

Flatten the surfaces before you fill the voids. This takes longer than filling the voids first, because you have to remove the excess epoxy by hand. But epoxy can dull a sharp edge—why risk your jointer or planer knives when you can sand or chisel off the excess?

If the board you've chosen is more than 12" long, you can use your jointer and planer to flatten it. If the board is too short to be milled, savor the moment; this is a great opportunity to hone your hand-planing skills (Photo 2).

If your scraps are long enough, but too wide for your jointer, flatten them using only your planer. With the knives

set to make a light cut, run the board cupped-face-down until the face you're planing is flat. Then flip the board and flatten the cupped side. Use a sled if the board is twisted. Shim unsupported areas caused by the twist before planing. Once one face is planed, you won't need the sled to flatten the other face.

Clean and Fill the Cavities

Cavities in a board are a natural home for minerals, sand and dirt to settle in over the years—these contaminants will dull your chisels and carving gouges. That's why I use a high-speed rotary tool equipped with a carbide bit to remove decayed wood (Photo 3).

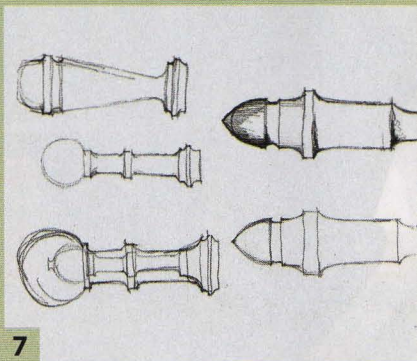
Use slow-setting epoxy to fill the cavities. I usually color the epoxy (Photo 4). For shallow cavities, just pour in the epoxy. If the void goes all the way through the board, seal the opening on the back side with masking tape. Use a spatula to work the epoxy

into awkward cracks and small dents (Photo 5). When the epoxy is dry—but before it has fully cured—remove the excess by hand with a chisel, hand plane or sandpaper (Photo 6).

Turn and Install the Handle

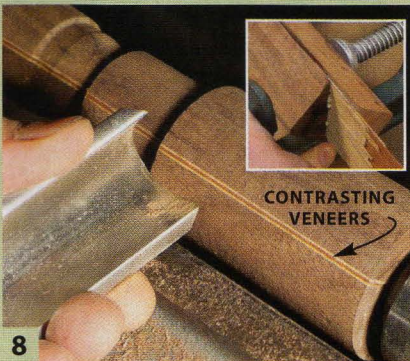
I never make two handles alike, so I have to come up with novel shapes every time I turn a new one (Photo 7). I use this opportunity to explore interesting resources in the environment around me. Architectural details, mechanical components and natural formations are all sources of inspiration. Sometimes, I laminate the handle blanks (Photo 8).

It's most efficient to turn two handles out of one long blank (Photo 9). The tenons on the ends of the handles are the only parts that must be accurately turned. I turn 1" dia. tenons for thick cutting boards (1-1/2" and up); anything thinner gets a 3/4" tenon. Always



7

I sketch new handle designs for each cutting board. All of the boards I build are unique, so it makes sense that the handles should be, too.



8

Laminating thin veneer strips of contrasting wood into the handle blank (inset photo) adds visual appeal.



9

It's easiest to turn two handles on the same blank, with the tenons facing one another. Then you can turn one long tenon.



10

Test-fit the handle to make sure it seats fully. It's okay if the tenon is a bit loose, because epoxy can fill gaps and still create a strong bond.



11

Use a chisel to finish shaping the handle after it's glued to the board. Saw off the waste first and complete the job by sanding.



12

Rub on flaxseed or walnut oil. Then sand with 400-grit wet/dry sandpaper. Wipe the board dry and let the oil cure for several days.

make the tenons longer than necessary and cut them to length when you fit the handle to the board.

If you orient the handles so they meet in the middle, you can turn one long tenon. But if you're used to working in one direction, from the headstock toward the tailstock, for example, it may be easier to orient the handles in the same direction.

Establish the tenon's diameter by plunging in with a parting tool at several locations along its length, using calipers to gauge the depth. Complete the tenon by removing the waste with a spindle gouge and finishing with a skew chisel.

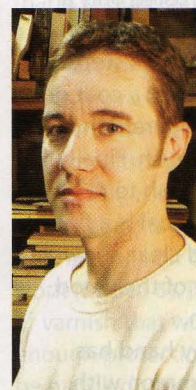
Shape the handles' beads, coves and fillets with spindle gouges and the skew. Sand the handles while they're still on the lathe; remove them to cut them apart. Use the handles' unfinished ends as clamping surfaces when you glue them in.

Drill a hole in the board and test-fit the handle (Photo 10). Then brush epoxy into the hole and around the tenon. Install the handle and clamp it until the epoxy cures. Remove the clamps and lay the board on your bench. If it rocks because the handle's diameter is too big, plane or sand the handle flush on both sides, so the board sits flat. Then finish shaping the end of the handle (Photo 11). Sand each board with 150-, 220- and 320-grit sandpaper before you apply the finish.

Food-Safe Finishes

I prefer using flaxseed oil or walnut oil for finishing (Photo 12). Unlike the vegetable or mineral oils that are often used as food-safe finishes for wood, flaxseed and walnut oil completely cure and polymerize. They're very easy to apply, they enhance the wood's natural beauty and scratches don't show as they do on varnish and other sur-

face-film finishes. You should be aware, though, that some people are allergic to walnuts. If this is a concern, go with flaxseed oil. Both oils are commonly available at health food stores.



Yoav S. Liberman teaches woodworking and furniture design at Harvard University's Eliot House. He is also an adjunct faculty member at Shenkar College in Israel, where he teaches furniture design, materials and construction. As a studio furniture

maker, Yoav's work combines the old and new, using found objects and discarded wood as a source and inspiration. Visit www.fas.harvard.edu/~liberm to see more.

Brush-On Finish

The Easy Way

Thinning the poly is the secret.

By S. Lloyd Natof

FINISHING is a challenge—right? It's one thing to get a nice finish on a small, flat sample board, but good luck with those inside corners, vertical surfaces, curved areas, thin edges, and framed panels. I don't care for spraying, which comes with its own set of problems, so I've developed a technique to apply a finish by hand, using only a brush and some rags.

The general sequence of steps goes like this: First, I apply a coat or two of thinned-out polyurethane. Then I scuff sand the finish. Finally, I apply a coat of gel varnish to remove the sanding haze. The goal is a finish that appears level and clear, shows the pores and texture of the wood, and feels very smooth.

Applying a finish by hand has many attributes in common with using hand tools. The process is quiet, meditative, and benefits from a methodical approach.



1 **Brushing a finish** is much easier *before* assembly. For the best results, thin the finish, tape the joints, and lay all the pieces flat on your bench.

Materials

- **Brush.** I use a 3" foam brush with a wood handle. I cut about 1" off the end of the handle so the brush can be stored in a quart can of finish. This eliminates the use of solvents to clean the brush.
- **Polyurethane.** I use semi-gloss Minwax Fast Drying Polyurethane for the interior of a cabinet and gloss for the outside.
- **Thinner.** I use naphtha rather than paint thinner because it evaporates faster. The goal is to thin the poly so that it will stay wet and flow out better without extending the drying period too much.
- **Gel varnish.** I like Bartley Gel Varnish.
- **Sandpaper.** I use 3M 216U Fre-Cut Gold stearated sandpaper in P400, P600 and P800 grits. It's available from Homestead Finishing, www.homesteadfinishing.com, (216) 631-5309.

- **Felt block.** This is for backing the sandpaper.
- **Cotton rags or paper wipes.** I use Brawny medium weight Taskmate Wipers, available at the grocery store.
- **Japan drier.** This helps speed the drying process. It's available at most paint stores.

Technique

I completely pre-finish all the interior surfaces and partially finish the exterior surfaces of a cabinet before assembly. Pre-finishing lets you work on surfaces without having to brush into an inside corner. Pre-finishing also allows you to place all your parts in a horizontal position to prevent drips and runs (**Photo 1**). You'll finish one surface at a time, letting it dry completely before turning it over to finish the opposite side. Before finishing, tape off mortises, tenons and all glue surfaces with standard masking tape. Trim the tape after it is applied using a utility knife.



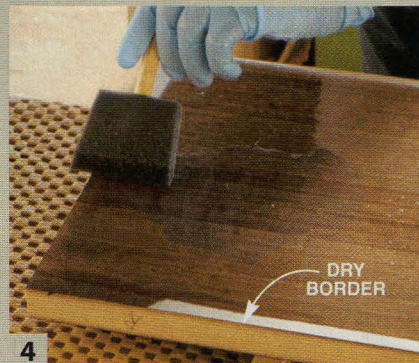
2

Brushing technique really matters. On a panel, start by brushing a perimeter. Leave a dry border to prevent drips.



3

Fill in the perimeter. Lay out an even, wet coat of polyurethane over the whole surface, except the border.



4

Brush the dry border, moving parallel to the edge. Hold the brush lightly, barely overhanging the edge.



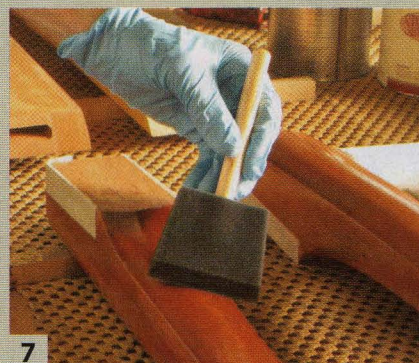
5

Make the final strokes with an unloaded brush, following the grain.



6

Finish the edges next. Brush on the finish, then wipe it off immediately.



7

Curved surfaces test your skills. Use a less saturated brush with a light touch and check repeatedly for drips or sags.

Start by sanding everything to 180 grit. Wet the sanded surfaces with a damp rag or sponge. After the wood dries, scuff sand the raised grain using a felt block and 220-grit paper. Wipe off or vacuum the dust. The surface doesn't have to be absolutely dust-free because scuff sanding between coats will smooth out any vagrant dust in the finish. You won't have to bother with a tack rag.

Next, prepare the finish. Stir 1/3 cupful of Japan drier into one quart of poly. Thin the poly with naphtha until it is more like water than syrup (usually about 40% naphtha by volume). The exact amount of thinner is not that important. What you want is a coat that flows out and stays wet while you brush.

Apply the poly using a disposable foam brush. After you're done with each coat, store the brush in a partial can of varnish. One brush will last for all the coats you'll apply.

Working with a foam brush requires

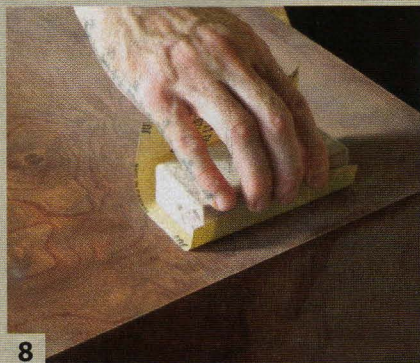
some getting used to. The main issues are that it unloads quickly and pushes a small puddle of finish in front of itself. With practice, you will get a sense for the right amount of finish to load into the brush. As for the puddle, let me show you how I finish a large panel.

Start by applying a perimeter of finish roughly 1" from the edge (**Photo 2**). Then, work the finish back and forth to fill in the middle (**Photo 3**). To avoid pushing the puddle over the edge of a panel, be sure to keep shy of the edges. Next, work the dry border with a brush that's loaded just enough to wet the wood but not enough to drip over the edge (**Photo 4**). Go back over the entire surface, in any direction, to move the finish around and create a thin even film with no puddles or dry patches. Finally, brush with the grain using very light strokes at a low angle, like a plane landing (**Photo 5**). Start the strokes just in from the edge and continue all the way off the opposite end. The only

downward pressure should be from the weight of the brush; you are just lightly smoothing the finish in the direction of the grain and don't want to push finish over the edge.

When you're done, examine the panel in a raking light. You should see a wet and even coat of finish. The brush marks should start to flow out and disappear, while the perimeter begins to look drier. If you see puddles or dry spots, move the finish around with the brush. Follow this up with light strokes that go with the grain. Check for drips on the edges and wipe them off.

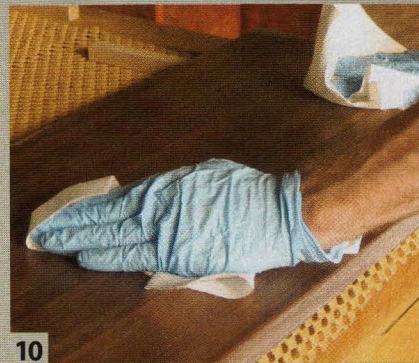
Next, tackle the edges. Brush on the poly and wipe it off right away with a cloth (**Photo 6**). This leaves a thin film of varnish that won't sag or drip. It's enough protection for edges that won't be handled very often. Use a raking light to check for a ridge of finish that may have been pushed onto the top. If you see one, smooth it out with a light brush stroke following the grain.



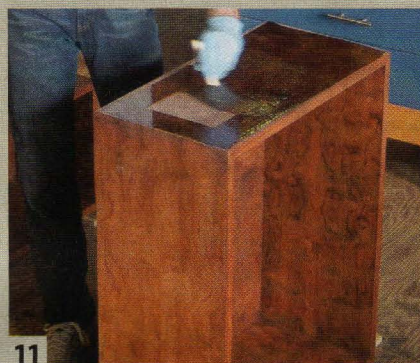
8 Scuff sand with 400-grit sandpaper after the first coat has dried overnight. Wrap the paper around a felt block.



9 Apply gel varnish to all the interior parts with a foam brush. Gel varnish helps remove the sanding haze.



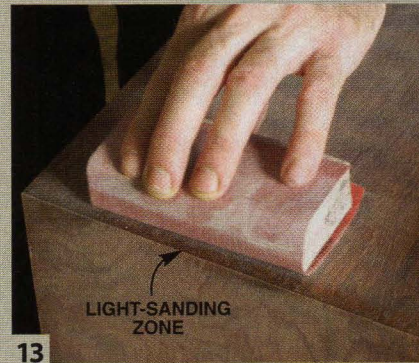
10 Wipe off all the gel with two rags and two hands. Remove the tape from the joints, then glue and assemble your project.



11 Apply a second coat of poly to the outside of the project.



12 Wipe up any drips that form on the edges with a folded towel.



13 Sand the exterior surfaces with 600-grit paper. Sand to within 1/8" of an edge, then make very light passes in this zone.

If you want to have more finish on an edge, wait until the faces are dry, then stand the part up on edge for brushing. Don't forget to wipe off any drips after brushing the edges.

If you're finishing a curved part, use a much drier brush (**Photo 7**). Dip the brush's tip in the finish and stroke lightly with the brush held in a vertical position. Limit your working area to one face and brush out a thin, even coat. Wipe off the adjacent faces to remove any drips.

When you're done brushing, clean the can's rim, drop in the brush, hold a deep breath for a minute, and exhale into the can. Quickly put on the lid. This helps to replace the oxygen in the can with carbon dioxide, which minimizes the skin that may develop on the finish's surface.

Lightly scuff sand every surface after it has dried for one day (**Photo 8**). Be careful near the edges, where the finish can be extra-thin. The edges that you

wiped off should already be smooth, but if you need to sand out a little fuzz, use a very light touch with 800-grit paper.

Once you're done sanding, use a new foam brush to apply 2-3 coats of gel varnish to the interior surfaces only (**Photo 9**). Working one part at a time, brush the gel on most of the surface, then smear it around and begin to remove it with a wipe in each hand. Switch to a new set of wipes to remove all the excess gel varnish (**Photo 10**). Any remaining gel will dry to a sticky mess, so get it off now. Use a clean, folded wipe on the edges. Remove any vagrant gel from the underside of the part and clean off smudges from your hands on the top.

Now you can remove the tape and glue your project together. Apply two coats of thin gloss poly on the outside surfaces (**Photo 11**). Sand with 400 grit in between coats. If you're finishing a cabinet, brush one side at a time, rotating the case to bring a new side

horizontal after the previous side has dried. You should be able to finish two or three sides in one day. Blankets and padding are important to protect the sides from damage as you rotate the cabinet. Wipe off any drips that may form on the edges (**Photo 12**).

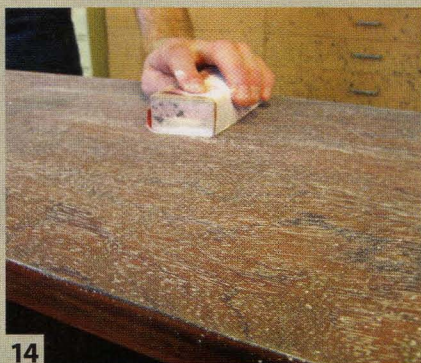
Note: The used wipes should be spread out to dry when you are done.

Wait at least two days for the second coat to dry. Then lightly scuff sand with 600-grit paper to dull the glossy surface by about one-third (**Photo 13**). Repeat with 800-grit paper wrapped around the felt block. This time, push down harder to level the surface (**Photo 14**). Look for a 90% sanded surface with an even pattern of small,

QUICK GUIDE

Interiors: Semi-gloss poly, 400 grit, 2-3 coats gel varnish.

Exteriors: Gloss poly, 400 grit, gloss poly, 600 and 800 grit, 3-4 coats of gel varnish.



14
Repeat the process using 800-grit paper to level the surface. Again, sand much less near the edges.



15
Apply gel varnish until you get the look you're after.

shiny pores after you wipe off the dust.

Finally, use a gel varnish to reduce the sanding haze, just as you did with the interior surfaces (**Photo 15**). I usually apply two to five coats of gel on top of the poly to get the finish I am looking for. For my really special pieces and on dark finishes, I polish with 3M's Imperial Hand Glaze #5990 between the last coats of gel. I rarely use wax except on thin or satin finishes.

This finishing process can be used over dyes and stains, but you must be very careful near the edges, especially with dyes. Dark colors require more coats of gel and Hand Glaze polishing to remove the sanding haze.

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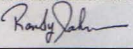
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Water-Cooled Sharpening Machines

A look at 4 models from Tormek, Grizzly and Jet

By Dave Munkittrick

TODAY'S WATER-COOLED sharpening machines, also called wet grinders for short, can reshape and sharpen almost any cutting tool you own. Like their foot-powered ancestors, they get the job done without the risks associated with a bench grinder. Overheating and blueing tool steel is impossible with a wet grinder because its slow speed and constant water bath keep the tool cool. There are no flying sparks or superfine grinding-wheel dust to worry about either.

In this article, we'll look at wet grinders that come with a leather honing wheel, making a one-stop sharpening machine. Other types of wet grinders don't have honing wheels but come with additional high-speed dry wheels, or are simply horizontal wet-wheels.

These one-stop systems are self-contained. There's no need to switch wheels to change grits. You use the wet-wheel for coarse and medium-grit grinding and the leather wheel for final honing. They're also compact and easy to store.

Wet grinders have a couple downsides, though. Wet grinding is slower than using a bench grinder when it comes to reshaping a tool or removing a nick in its edge. If you're in a hurry, you'd use a bench grinder for shaping, then move to a wet grinder for sharpening.



Like waterstones, these machines make a wet mess. Keep that in mind when you choose a place for your machine. It's best to mount it on a plywood base with a lip to capture the water. A large cookie sheet will also do the trick.

There is a vast array of accessories available for these machines that allow you to sharpen just about anything: planer and jointer blades, axes, knives, scissors, even hard-to-sharpen carving chisels and turning tools. Most of the accessories are interchangeable between machines because all the guide bars that the accessories mount on have the same diameter.

We looked at four models: two from Tormek and one each from Grizzly and Jet. All four produced a good, sharp edge on chisels and plane irons.

The price range is pretty dramatic: from \$160 to \$590. But there are considerations that explain that spread. The more expensive the machine, the less hassling and tinkering around you have to do to get the job done. Things like microadjustment knobs, well-designed tool holders, and easy-to-use angle guides make setup quick and easy. Another price factor is the number of accessories included in the basic package. At the base price, some machines leave out essentials such as a wheel truing device and a dressing stone. These are hidden costs that a buyer should be aware of.

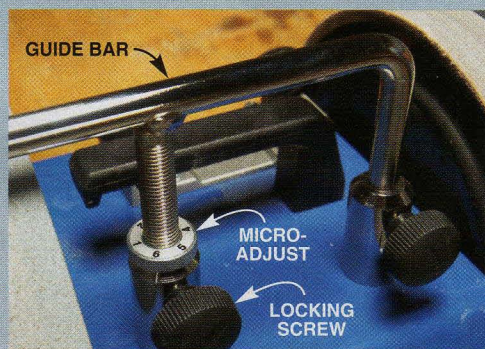
All four machines come ready to go. All that's needed is to mount the wheel, add water and charge the leather honing wheel with compound, and you're ready to sharpen chisels and plane blades.

FEATURES

THE SHARPENING PROCEDURE IS SIMILAR on the four machines we tested. The way in which the following features perform can make using the machine more of a pleasure and less of a chore.

Guide Bar

A solid bar with two posts guides the tool across the face of both wheels. Raising or lowering the guide bar changes the bevel angle of a tool. The guide bars on these machines aren't exactly the same. Three have a microadjust for setting the bar's height—one doesn't. A microadjust takes the hit or miss out of the setup and makes it easy to add a microbevel. A microbevel is a short bevel at a steeper angle that's honed only at the final grit.



Tormek's guide bar features a calibrated micro adjust knob for accurate height adjustments in .01" increments. Tormek uses Acme threads on the guide bar to prevent damage from the locking screws.



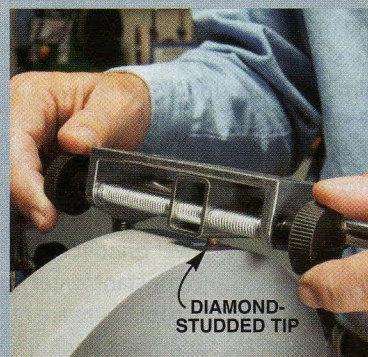
Jet's microadjust knob also simplifies height adjustment, but a larger knob with calibration would make this setup better. In place of Acme threads, Jet uses standard threads and grinds a flat on the post for the locking screws.



Grizzly has the same sturdy two-post design as the other two guide bars. This machine doesn't have a micro-adjust knob, though. The guide bar's height is a little trickier to fine-tune.

Trueing Tool

The surface of any grinding wheel eventually gets uneven. A diamond-tipped trueing tool is a must to restore the surface so that the wheel is round and flat. The most accurate way to do this is to mount the truing tool on the machine's guide bar. The Tormek T-7 comes with such a guided diamond trueing tool; the T-3 and Jet offer one as an accessory. Grizzly offers a hand-held diamond trueing tool as an accessory. While you could get by with this, a guided system is much better. Fortunately, both the Tormek and Jet trueing tools fit on the Grizzly guide bar.



Tormek's diamond trueing tool is the best of the bunch. It uses a foolproof screw-feed system to slowly draw the diamond-studded tip across the stone. The tool's depth of cut is controlled by the guide bar's microadjust.



Jet's truing tool is sold as an accessory. The tool rides on the guide bar and uses a stop bar to control the depth of cut. The Jet tool relies on your hand to guide it across the stone.

Dressing Stone

A dressing stone is used by all the systems to alter the wheel's grit. This must-have tool is only included with the Jet and the Tormek T-7. The dressing stone has a smooth side and a rough side. When sharpening, the normal progression is to dress the wheel with the rough side of the stone to expose fresh grit for your initial grinding. This creates a roughly 220-grit surface. After that, the wheel is dressed with the smooth side of the stone to create a finer surface (about 1,000 grit), which puts a sharper edge on the tool. The tool is now ready for a final polish on the honing wheel.



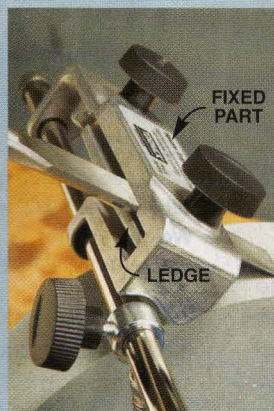
Honing Wheel

All the wet grinders have a small leather-covered wheel for putting the final edge on a tool. It can be used free-hand or with the guide bar. The leather is charged with a polishing paste that contains a very fine grit. Honing puts a mirror finish on the tool's edge. The wheel can also be used to polish the backs of chisels and plane irons.

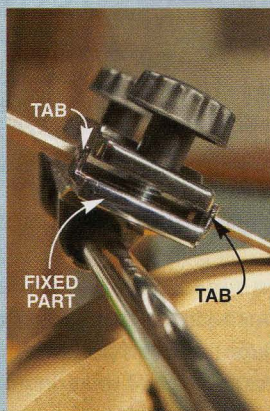


Chisel and Plane Blade Tool Holder

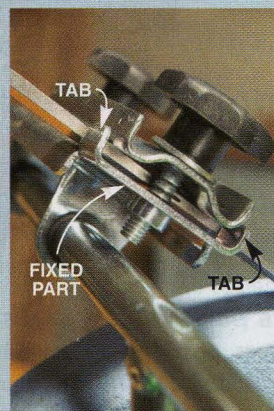
When you sharpen a straight-edged chisel or plane blade, you'll clamp it in a holder. This maintains a constant angle and guides the tool across the stone.



Tormek's holder eliminates the chance of clamping the tool unevenly. The back of the blade registers against the fixed upper part of the holder. An alignment ledge automatically squares the tool and accommodates short chisels.



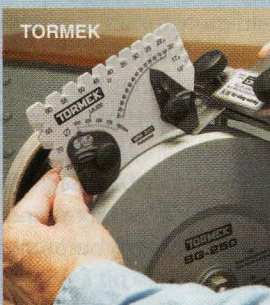
Jet's holder works well for standard chisels and plane irons. Alignment can be a problem, though. The upper part that registers the chisel's back isn't fixed, but can rock. In addition, the holder's two small alignment tabs are spaced too far apart to easily position a chisel with a short blade.



The Grizzly holder does a fine job on standard chisels and plane irons. This holder also clamps the top of the chisel against the fixed part of the jig. This arrangement can cause misalignment of the chisel in the holder. As with the Jet holder, a two-tab design makes short chisels difficult to align.

Angle Guide

An angle guide is critical to setting the height of the guide bar. You'll use the angle guide to repeat a specific bevel angle or create a new one. The Tormek and Jet guides adjust to compensate for a shrinking diameter as the wheel wears.





TORMEK T-7

Cost: \$590

Wheel speed: 90 rpm

Wheel size: 2" x 10"

Weight: 37 lbs.

Power: 115V, 1.5 amp continuous duty motor



THE T-7 SETS THE GOLD STANDARD in the field. All the accessories I tried are well thought out and perform their tasks admirably. They didn't require a lot of tinkering or adjustments. Swapping accessories is quick and easy.

The T-7 incorporates several new improvements over previous models. Tormek now uses stainless steel for the drive shaft and wheel-mounting hardware to eliminate corrosion. They switched to Acme threads on the guide bar. The standard tool holder is redesigned and better than ever because it clamps the back of the chisel against the fixed portion of the holder. A continuous alignment ledge allows it to handle short-bladed chisels.

Tormek offers accessory jigs to sharpen planer and jointer knives, long or short knives, scissors, axes, scrapers, spokeshave irons, turning tools and carving tools. The T-7 also offers two accessory wheels: a superfine Japanese waterstone, primarily for carving tools, and an extra-hard stone for sharpening high-speed-steel turning tools.

The hardcover handbook included with the machine is fully illustrated and covers all the operations and use of the accessories in the Tormek line. Tormek's website is also a great resource.

The T-7 includes: hardcover handbook, DVD, square-edge jig for chisels and plane blades, diamond truing tool, dressing stone, an angle guide, honing compound and a 7-year warranty.

Tormek, www.tormek.com, (800) 586-7635.



TORMEK T-3

Cost: \$340

Wheel speed: 120 rpm

Wheel size: 1-1/2" x 8"

Weight: 16.4 lbs.

Power: 115V, .97 amp 30 min./hr. duty motor

THE T-3 BECAME AVAILABLE in September of 2008. It offers Tormek quality at a lower price. Its wheels are smaller than the T-7's, and unlike the T-7, it's not powered by a motor rated for continuous duty. The T-3 body is made of ABS plastic rather than steel. None of these changes should matter a great deal to the woodworker who wants a machine for occasional sharpening.

The T-3 is designed to take most of the accessories available for the T-7. Tormek does not recommend using the planer blade attachment or the molding knife jig on the T-3 because these accessories are too big.

Unlike the T-7, the T-3 does not come with a wheel truing tool or a dressing stone. These are must-have components that add about \$100 to the T-3's price. But with these components you still save about \$150 over the T-7.

The T-3 does use stainless steel hardware and has a 7-year warranty. The warranty does not include commercial use.

Tormek's website is available to T-3 owners as well. It's kept up-to-date with information for the Tormek owner and features a moderated forum where you can ask questions and receive expert answers.

The T-3 comes with a square-edge jig for straight chisels and plane blades, an angle guide, honing compound, a DVD and instruction book.

Tormek, www.tormek.com, (800) 586-7635.



JET JSSG-10

Cost: \$360

Wheel speed: 90-150 rpm

Wheel size: 2" x 10"

Weight: 36 lbs.

Power: 120V, 1.8 amp continuous-duty motor

THE JET WAS EASY TO SET UP. I found the included video by Ernie Conover very informative and useful. Ernie covers everything from setup to use of the optional jigs.

The Jet has some unique features. The wheel speed can be adjusted from 90 rpm to 150 rpm. The idea is to keep the rim speed constant as the wheel diameter shrinks with use. I also found it useful to speed up wheel truing, rough grinding and honing operations.

Jet has the best water reservoir of the bunch. The large, flared edges do a great job of catching the water slung from the stone and make it easier to fill without spilling. Jet uses a gutter at the top of the machine to funnel fugitive water back to the tray.

The Jet uses a manual torque control to compensate for drive shaft slippage when pressure is applied to the wheel. Torque is automatically adjusted on the other machines.

The Jet has a handy storage drawer built into the base for the dressing stone, tool holder and honing paste. An optional stand is available that features two additional drawers and a wrap for cord storage. The stand also serves to catch and contain spilled water.

The machine comes with a dressing stone, straight edge jig for chisels and plane blades, angle measuring device, angle setting guide, honing compound and a well-done instructional DVD.

Jet, www.woodworking.jettools.com, (800) 274-6848.



GRIZZLY T10010

Cost: \$170

Wheel speed: 90 rpm

Wheel size: 2" x 10"

Weight: 41 lbs.

Power: 110V, 3 amp continuous-duty motor



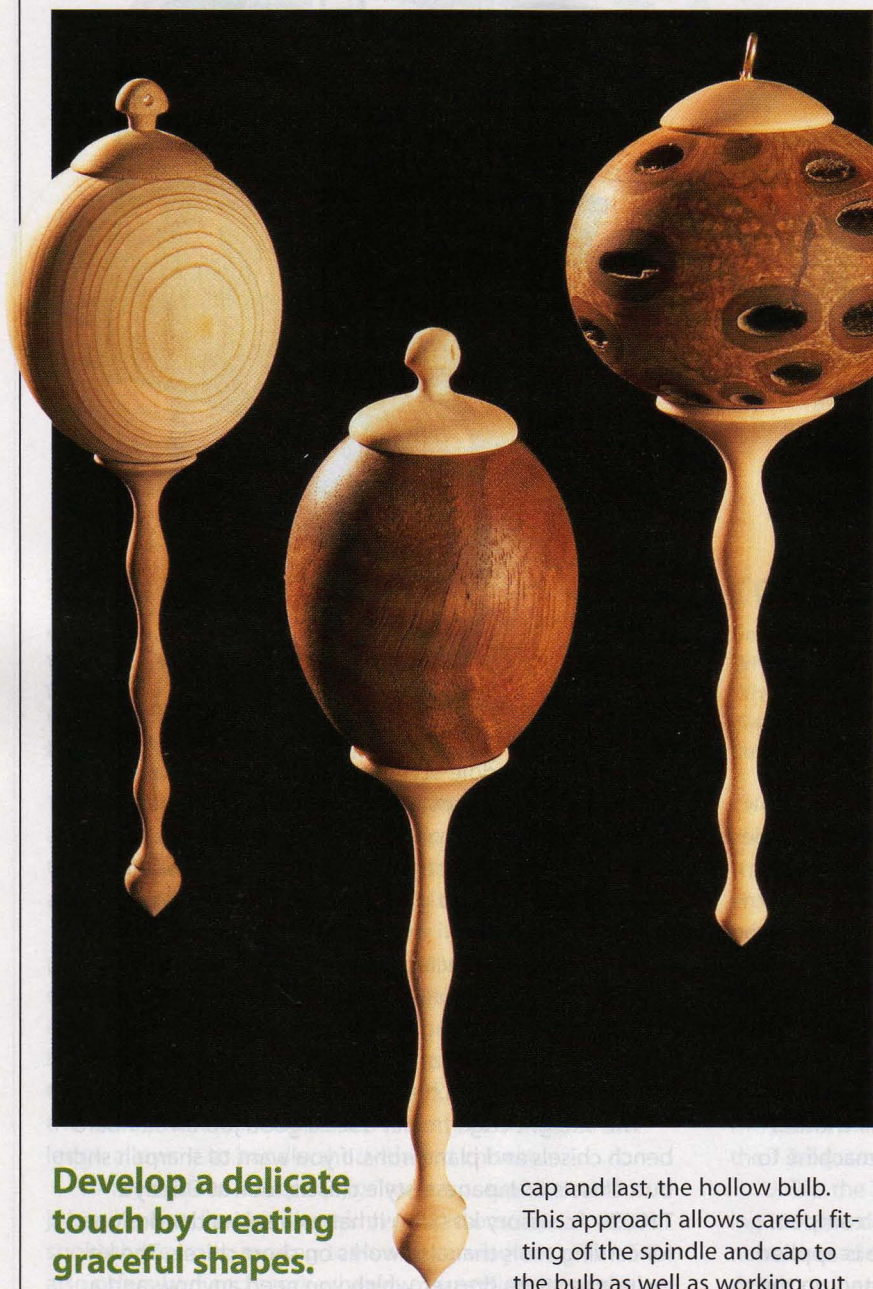
THE GERMAN-MADE GRIZZLY gets the job done at a low price. The wheel runs true and the motor has plenty of power. The paddle-style power switch was the easiest to operate of all the machines. Given that the grinder is frequently turned on or off, this is a nicer feature than you may think. The instruction manual is very brief, but it's enough to get you going on the basic operation of the machine.

Grizzly does not include a dressing stone or truing device. Grizzly sells a hand-held diamond dresser (\$11). It costs less than a truing tool, but you'll need to make a holder to accurately true the wheel. The guide bar is a little touchy to fine-tune in the absence of a microadjust.

The straight edge holder does a good job on standard bench chisels and plane irons. If you want to sharpen short butt chisels or Japanese-style chisels, look at Grizzly's T10024 Accessory kit (\$60). It has a chisel holder designed for carving tools that also works on short chisels. The kit includes a stone dresser, which you need anyhow, and a tool rest and jig designed for sharpening scrapers and screwdrivers. The rest can be used to help guide Grizzly's handheld diamond dresser.

The Grizzly is a tremendous value. You can add the diamond tool and the T10024 Accessory kit to round out the package. You might consider buying Tormek's diamond dressing tool rather than a handheld tool because it fits on the Grizzly guide bar. The Grizzly comes with a straight edge tool holder for chisels and plane blades, an angle guide, and a tin of honing compound.

Grizzly, www.grizzly.com, (800) 523-4777.



Develop a delicate touch by creating graceful shapes.

By Alan Lacer

MASS-PRODUCED Christmas ornaments are no match for these hand-turned beauties. They'll quickly become treasured keepsakes—and the delicate spindle work and hollow turning involved will certainly test your skills.

Each ornament contains three parts. I suggest making the long, slender spindle first, then the top

cap and last, the hollow bulb. This approach allows careful fitting of the spindle and cap to the bulb as well as working out the proportions for a pleasing appearance.

Part of designing wooden ornaments is selecting and mixing materials. For the spindle, almost anything goes. But dense woods such as hard maple, cherry, cocobolo and goncalo alves are well suited for turning the thin diameters and fine details that characterize the best ornaments. The hollow bulb-shaped body can be turned from

virtually any interesting-looking wood or other material, including dyed, bleached or colored wood, spalted wood, plywood, plastic—even Banksia pods (see Sources, page 81).

To hollow the bulb, you'll need a small straight scraper and at least one offset or bent scraper (see Sources). The rest of the turning can be done with basic spindle-turning tools: a roughing gouge, a detail gouge, a thin kerf parting tool and a skew chisel.

Turn the Spindle

Install a 3/4" to 1" square blank in a scroll chuck, using the small jaws (**Photo 1** and Sources). This blank can be as long as you want, but 4" is a good length to start with. Use the tailstock to center the blank in the chuck. Here's how. Loosely mount the blank in the chuck, after marking the center of its tailstock end. Bring up the tailstock and engage its live center in the blank's center mark. Then tighten the chuck.

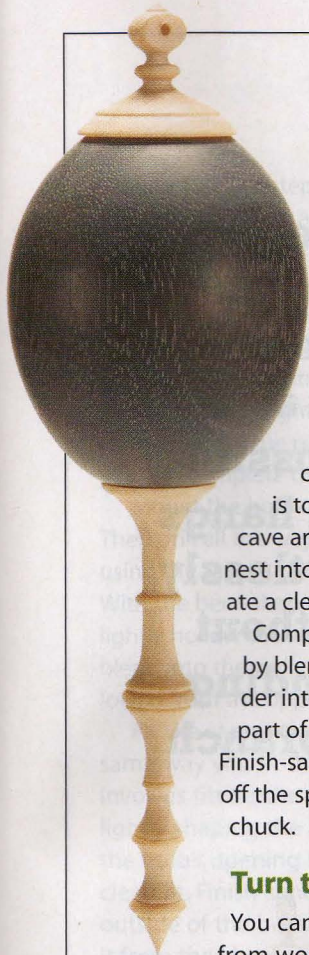
Round the blank with your roughing gouge, being careful to not get too close to the chuck's jaws.

Pull away the tailstock and taper that end of the blank down to about 3/8" dia. (**Photo 2**). Then turn tiny details of your own design, starting from the tapered end. Move one step toward the headstock after finishing each detail (**Photo 3**). It's quite difficult to go back, due to the small diameters.

As you near the chuck jaws, leave room for three elements: a flared shoulder, a 1/4" long tenon and sufficient waste material for parting off (**Photo 4**).

The tenon is based on the size of the bulb; a diameter just over 1/2" is a good starter for the ornaments shown here.

Undercut the inside of the flared shoulder with the long point of the



skew or a thin kerf parting tool. This is tricky, because you're working so close to the chuck jaws. So go at it carefully. The goal

is to create a concave area for the bulb to nest into, in order to create a clean-looking joint.

Complete the spindle by blending the shoulder into the detailed part of the turning. Finish-sand and then part off the spindle from the chuck.

Turn the Cap

You can make the cap from wood remaining in the chuck after turning the spindle, a contrasting wood, or material of a diameter larger than the spindle. Whichever you choose, mount the blank in the scroll chuck.

Establish and turn the tenon for mounting the cap to the bulb (**Photo 5**). If you intend to turn a cap with long and delicate shaping, it's best to turn the tenon on the headstock end, as shown earlier, while turning the spindle. If the cap is short, the tenon can go on either end of the blank. I normally turn this tenon to the same diameter that I used for the spindle's tenon.

Turn tiny details and a concave shoulder, as on the spindle (**Photo 6**). Again, the concave shoulder will create a clean, flush fit when you attach the cap to the bulb.

Decide how the ornament will hang, either from a hole drilled through the cap or from a metal eyelet threaded into the top of the cap. For an eyelet, just provide a small flat area for mounting. For a

through hole, turn a 1/4" to 3/8" dia. round or elliptical shape at the top of the cap. Finish-sand and part off the cap from the chuck.

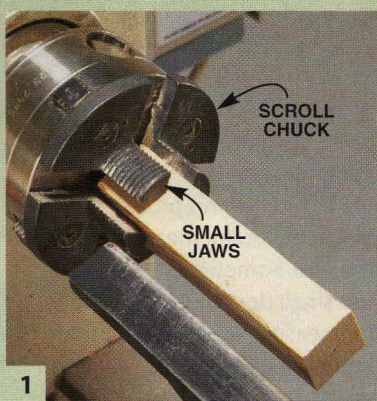
If you decided on through-hole hanging, flatten the shape you turned at the top of the cap by sanding both sides. One easy way to do this is to mount a small sanding disc in the headstock, using a Jacobs chuck. Finish up by drilling a 1/8" hole through the flattened area. If you're going to thread in an eyelet, simply drill a small pilot hole on the top of the cap.

Turn the Bulb

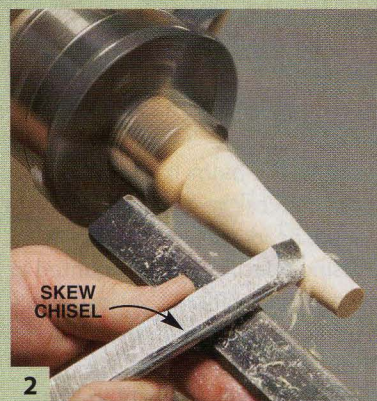
Decide on the bulb's shape and dimensions. Shaping options include a ball, an ellipse and an egg, to name a few. The bulb's size can be quite varied, but I suggest starting with something around 1-1/2" to 1-3/4" in diameter and about 2" in length. Allow extra length for mounting the blank in the chuck as well as the additional material that you'll need for turning the bulb from both ends.

Start the square blank between centers to create a tenon for the scroll chuck's small jaws, or install the

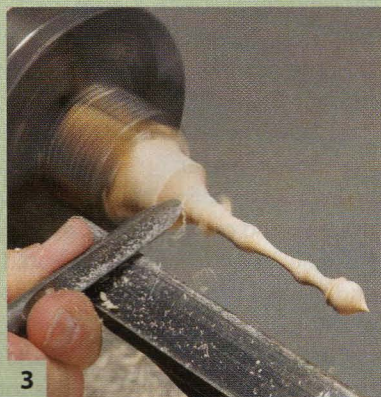
TURN THE SPINDLE



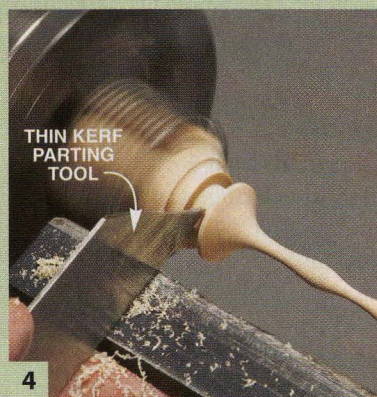
Each ornament contains a bulb, a cap and a long spindle. Mount a blank for the spindle in the chuck. Engage the tailstock center and round the blank.



Turn the end of the spindle down to a small diameter, after removing the tailstock. The goal is to create a spindle that's thin and delicate, like an icicle.

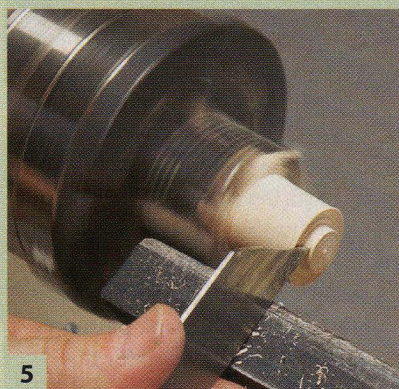


Create tiny details, working from the end of the spindle towards the headstock, to avoid a break. Flare the shoulder near the chuck, leaving sufficient room for a tenon.

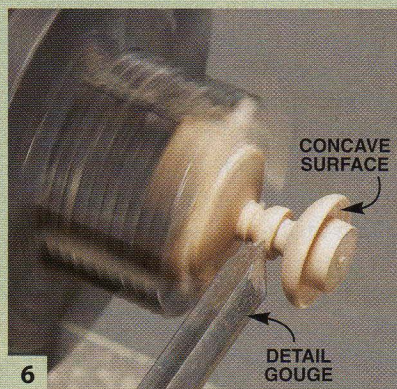


Cut a short tenon with a thin kerf parting tool. Undercut the back of the flared shoulder, so it will fit snugly against the rounded bulb. Then part off the spindle.

TURN THE CAP



5 Mount a short, square blank for the top. As before, work from the tailstock end of the blank towards the chuck. On a short cap like this one, the tenon can go on either end.



6 Finish the cap by creating delicate details above a flared or rounded shoulder. Once again, undercut the shoulder to create a concave mounting surface.

One goal is to make each ornament as light as possible, so it hangs effortlessly, without bending the branch.

chuck's regular jaws and directly mount the blank.

Create the bulb's basic shape, but do not reduce the diameter completely at the headstock end (**Photo 7**).

Using a Jacobs chuck mounted in the tailstock, drill a 1/2" hole about three-quarters through the bulb (**Photo 8**).

Fit the spindle to the bulb. You may need to slightly enlarge the hole to fit the tenon. You may also need to lightly shape the end of the bulb, so it fits into the spindle's concave shoulder. When the spindle fits perfectly, finish-sand the outside of the bulb.

Hollowing through a small opening is a form of blind turning. Using a small straight scraper, open up the inside of the bulb. Stop to clear chips often and be careful to work the shape to roughly match the outside. Keep the walls at least 1/4" thick at this time.

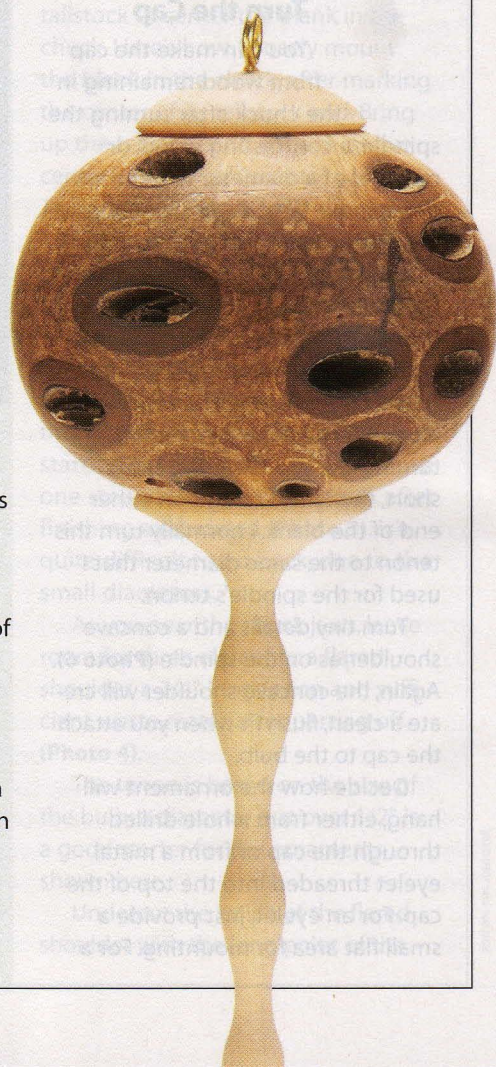
To create a lightweight bulb, you'll need to further reduce the wall thickness. Use a bent-shaped scraper to reach the inside areas from the bulb's midpoint to just below the rim (**Photo 9**). Start from the rim, measure often, and follow the bulb's outside shape

until you reach the end of the drilled hole. Strive for a finished wall thickness between 1/8" to 3/16".

The hollowing process requires frequent, careful measurements of the wall. Sometimes it's possible to use small double-ended calipers for measuring, but I use nothing more than a section of stiff, but springy wire from a hardware store (**Photo 10**). Bend the wire like a safety pin, closed down to about 1/4" at its opening. With the lathe off, insert the tool and simply move it from the rim along the wall. When the wall thickness is 1/4" the tool will just pass through. Thinner areas will show as a gap above the outside; thicker areas push the wire open.

In order to hollow the other end of the bulb and complete the turning, the bulb has to be removed, rotated end-for-end and remounted, using a technique called "reverse chucking."

Part off the bulb from the chuck, a tiny bit longer than its finished length (**Photo 11**). Using the waste that remains in the chuck, turn a tenon to mount the finished end of the bulb and a concave shoulder to secure it



(Photo 12). This step is also tricky, because the tenon and shoulder have to hold the bulb firmly enough to allow drilling and lightly turning the unfinished end, but loosely enough to allow pulling the bulb off when it's finished. If the tenon ends up slightly undersize, shim it with tissue paper so that you can complete the bulb.

Mount the bulb on the tenon. Then drill all the way through, using the Jacobs chuck, as before.

With the bent-shaped scraper, lightly hollow the inside walls to blend into the walls previously hollowed from the opposite direction.

Fit the cap to the bulb the same way you fit the spindle. This involves fitting the tenon and lightly shaping the area around the bulb's opening to create a clean fit. Finish-sand the entire outside of the bulb, then remove it from the chuck.

Glue the cap and spindle to the bulb. You can use just about any glue; I use quick-set epoxy. Hang your completed ornament with fishing line or thread.

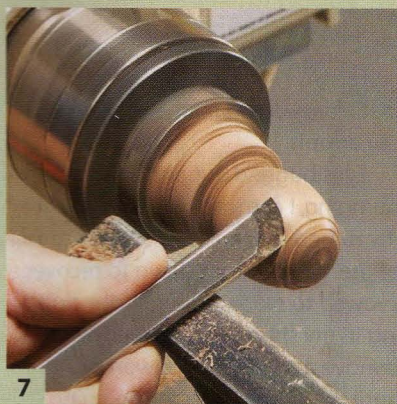
Finishing

I usually apply finish while the pieces are still on the lathe. You have numerous choices, including shellac, wiping varnish or oil finish. Wax is also an option for adjusting the sheen. If you wait until the ornament is assembled, you could suspend it before applying the finish—then you could even use a spray-on finish. 

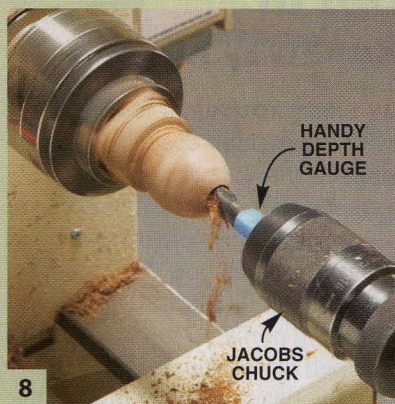
Sources

Packard Woodworks, www.packardwoodworks.com, (800) 683-8876, Banksia Pods, #114909, \$26 per package of 4; Hollowing Tools Set, #103389, \$93; 1/16" Parting Tool, #108743, \$27; Scroll Chuck, #112670, \$225; #1 Spigot Jaws, #112671, \$41; #1 or #2 MT Jacobs Chuck, #111011 or #111012, \$37.

TURN THE BULB



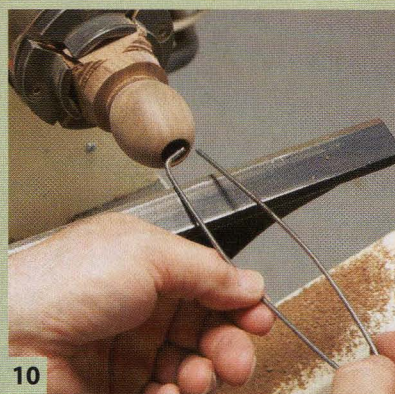
Shape the bulb blank into an egg or ball form, using the roughing gouge and the skew chisel. Leave the headstock end a bit oversized.



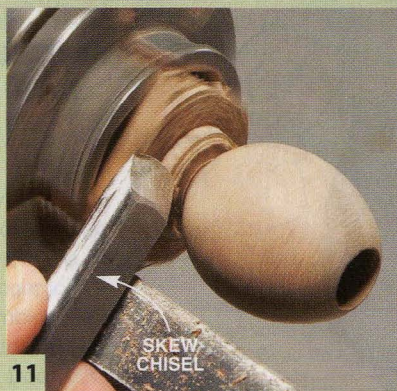
When the bulb's shape is about 80% complete, install a Jacobs chuck in the tailstock and drill a hole approximately three quarters of the way through the bulb.



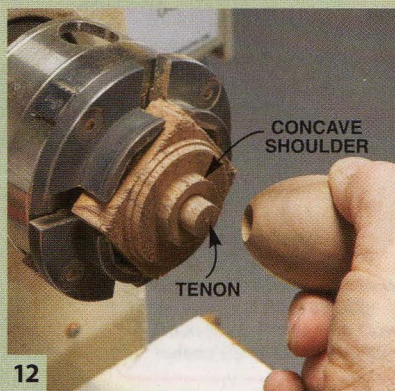
Hollow the bulb. First, use a straight scraper to expand the drilled hole. Then switch to a bent-shaped scraper to work the inside walls.



Use a piece of bent springy wire to gauge the wall thickness. Strive for a finished thickness between 1/8" and 3/16"—the thinner the walls, the lighter the bulb.



Part off the bulb after you've finished turning the headstock end and sanded to 220 grit, so that no tool or scratch marks remain.



Remount the bulb on a tenon and concave shoulder you've turned on the remaining waste material. Then complete the bulb's unfinished end: Drill through, shape the inside and sand the outside.

Runaway Router

MY FIRST ROUTER, a 1968 Stanley, was a heavy, single speed machine. I remember it well because of what happened the very first time I used it.

I chucked up a Roman ogee bit and made my first pass. As I marveled, spellbound, at the professional-looking profile I'd just created, I switched off the router, removed it from the board and let it drop to my side, while holding it one-handed. Unfortunately, the bit was still spinning—it caught my shirttail and

instantly wound all the way up to my armpit.

Eyes bugged out and adrenalin pumping, I extricated the tool from my ruined shirt, walked to a far corner of the shop and sat down to recover. I vowed to stop wearing loose clothing in my shop and to never, ever remove a router from a workpiece until the bit has stopped spinning.

—Tom Hennek



Irrigated Tablesaw

MY NEW CABINET SAW required 240 volt power. Since a 240 volt circuit powers my lawn irrigation pump and the electrical panel sits twenty feet from my workshop, I deemed the wiring to be a simple matter. I installed a junction box and ran conduit to a new floor box adjacent to the saw. Pulling the wires was a snap—connections were made and a final inspection showed all systems go.

I pushed the saw's start button with the anticipation of a kid on Christmas morning. Nothing happened. I rechecked the electrical work—everything was in order—and hit the start button again. Silence. Then it hit me. The sprinkler system is connected to a timer, which activates a relay to start the pump. I had installed the junction box on the wrong side of the relay. The only time power flowed through that part of the circuit was when the grass was being watered—from 4 to 6 am!

—Rob Simalchik



Make your wood-working mistakes pay!

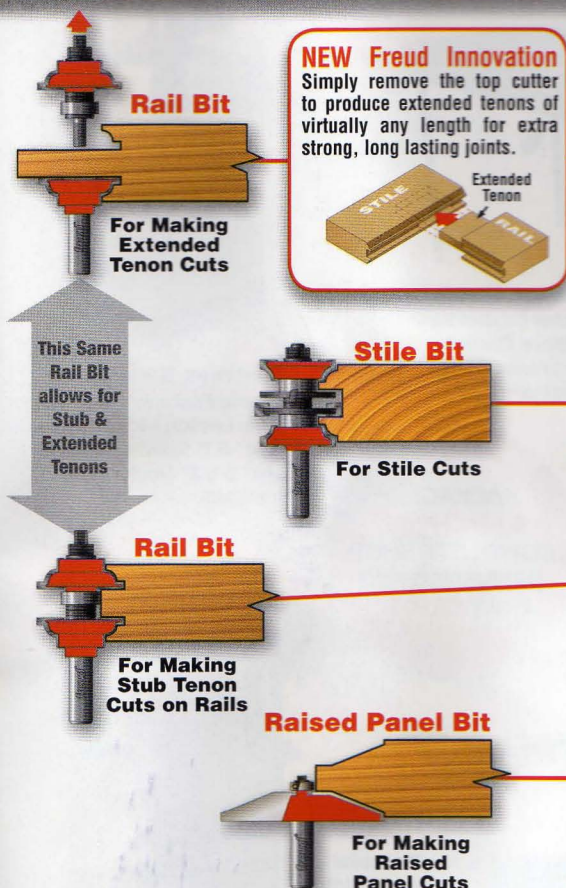
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