

CABINET SAW REVIEW: WE PICK THE BEST (page 48)



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(page 34)

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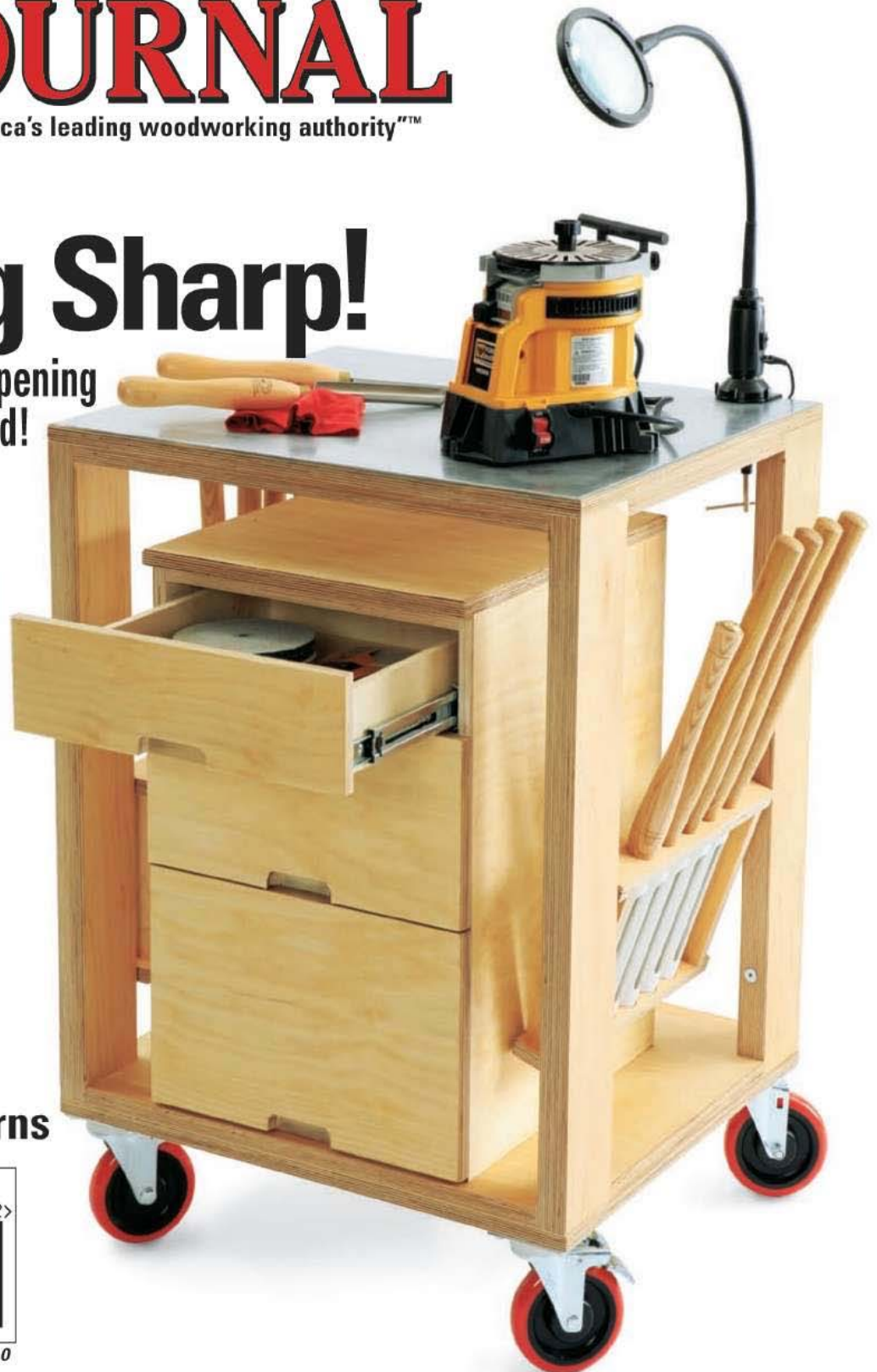
(page 24)

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# Woodworker's Journal

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# How Do You Turn Your Home's Interior From Ordinary To

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## Highboys and Red-box Bed-things

### IS IT JUST ME, OR IS THERE CHANGE IN THE AIR?

The recent passing of master craftsmen Sam Maloof (see page 20) and



James Krenov has me wondering if the era that those men did so much to empower — that of the small shop woodworker — is going through a significant shift. That inclination was only reinforced when I learned that the current season of *The New Yankee Workshop* will be its

last. Those of us who have a few years under our tool belts know that change is the only constant — and that change has the possibility of being either good or bad. So I am wondering, do you feel things changing? And if you do, where do you think we are headed?

—Rob Johnstone



### A Future Heirloom

Kerry Pierce's article in the *Oct. '09* magazine ["Queen Anne Highboy, Part 1"] has stimulated me to try such a project. I have some beautiful cherry I've been saving for a special project, and I have been trying to talk myself into attempting cabriole legs for two years or more. Seems like now is the time.

By the way, I disagree with your editor's decision on including the red box convertible bed thing. The people it would appeal to read *Popular Mechanics* or something. And making it a cover article baffles me. At least the girl is pretty.

— Bill Horn  
Shelbyville, Kentucky

### Mail Call!

Contact us by writing to "Letters,"  
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(763) 478-8396 or by email:  
[letters@woodworkersjournal.com](mailto:letters@woodworkersjournal.com)

We ask that all letters, including emails, include a mailing address and phone number. We reserve the right to edit for length and clarity.

I was very impressed with the highboy in your *October 2009* magazine. I am looking forward to building it, and hopefully it will become a family heirloom.

— Phil Exance  
Bridgewater, Connecticut

### Below Caliber?

There are many things that I like about your publication. The cover and ensuing project, in the *October 2009* edition, was not one of them. The convertible coffee table project looked like a last-minute job that the "stoners" in high school shop threw together upon realizing that something was due tomorrow.

I completely understand your magazine's need to appeal to a wide variety of skill levels. This, however, is well below your caliber. I don't buy furniture or anything else from IKEA, because it looks cheap. I certainly don't want to figure out a way that my projects can look and be cheaper than IKEA. Leave the dimension furniture projects to the sorry DIY publications.

— William "Dub" Pearman, III  
Jonesboro, Georgia

### Latch Not Allowed

Thanks for including General International's 25-200 Maxi-Lathe VS+ in your tool review ("Mid-sized Lathes," *October 2009*). You mentioned the inconvenience of having a screw on the pulley door. We wish to clarify that this is not a design flaw or error. We would much prefer a latch as well. In fact, the unit was originally designed with one. However, new safety



standards in Quebec mandate that we provide "lock-out" devices on covers to make belts and pulleys less accessible. Easy access, by way of a latch, is now considered a major safety hazard.

— Norman Frampton,  
Sales & Marketing  
General International

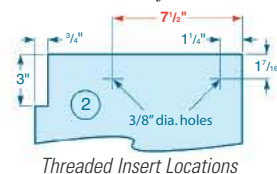
### Sticky Propositions

I just received the *October 2009* issue of the *Journal* and was reading the question from Bob

*Continues on page 8 ...*

### Project Correction

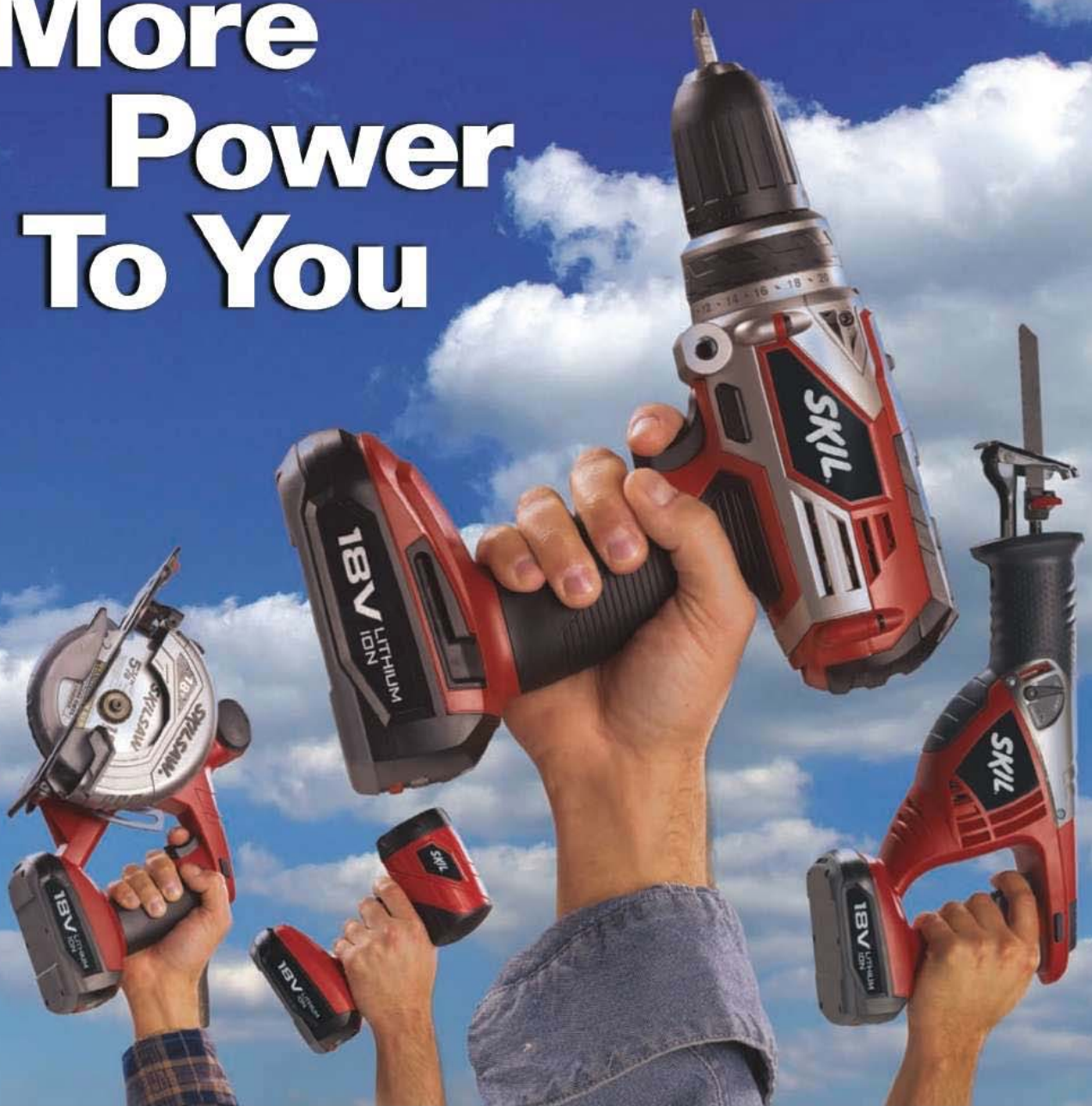
The threaded insert locations for the Tilt Top Router Table (*December 2009*) are incorrect. A corrected drawing (below) is available online at: [www.woodworkersjournal.com](http://www.woodworkersjournal.com)



Go to "More on the Web" and click on the Dec. 2009 issue.



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# Letters continued

Hoffman (replied to by Chris Marshall) regarding gluing patterns to wood so there is no residue left when the plan is removed. I place green painters tape on the wood, making sure I cover it fully (regular masking leaves residue). The green tape claims to be easily removable without residue after up to seven days. I then can use almost any type of spray adhesive and spray the paper plan with a light coating and attach my plan to the green tape.

— Jim Porter  
Calgary, Alberta

An alternative to spray glue is ordinary children's glue sticks, using the tape also. By using this method, you don't need to use mineral spirits to remove patterns: they peel right off.

— Greg Aksdal  
Pembroke, Georgia

For years, I used two-sided tape, but that wasn't really cost-effective. When I tried spray adhesive, I didn't like the sticky mess. Then I found out that self-adhesive shelf liner, applied over the entire surface of the workpiece, works fine. Spray your pattern and apply it to the shelf liner. It works on my most intricate pieces, and it's removable with no mess.

— Ray Kaufer,  
Richland, Oregon



**Strong reactions were the order of the day when it came to our coffee table / folding bed project.**

I use masking tape and Elmer's® white glue. I sand my project to at least 150-grit and clean well, then cover the piece with masking tape on the face. I then "paint" the top with the white glue and spread my pattern out, working out all of the air bubbles. Once the glue dries, the pattern is smooth and ready to work. When I'm finished cutting the pattern, I "peel" the tape and pattern off, sand the piece with 220-grit to remove any residue and wipe the piece with mineral spirits. I don't know how much the spray adhesives cost right now, but other than about 30 minutes' dry time, the cost is most likely comparable.

— Tommy Ensley  
Mountain City, Tennessee

*Letters continues on page 10 ...*



**Our readers have much to say on the topic of attaching patterns to the workpiece. Spray adhesive is not always their first choice.**

## ROCKLER PRESS

THE VOICE OF THE WOODWORKING COMMUNITY

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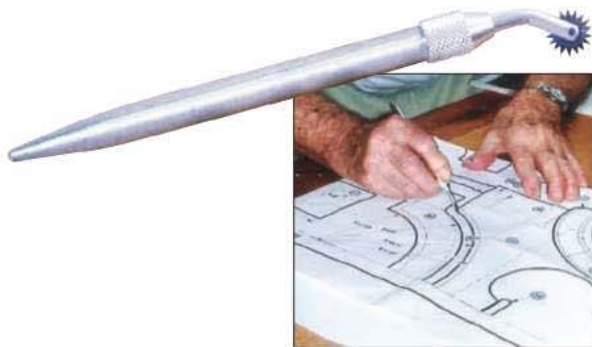
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**Two of our readers built their own versions of our platform bed. One of them pipes up about the complicated base on the original.**

My solution is not to apply the pattern with spray adhesive, but to use a ponce wheel to transfer the pattern onto posterboard. This way, you can cut the posterboard template and trace the pattern to your workpiece.

I am enclosing a photo showing a section of a drawing of a grandmother clock which shows the radius of some of the pieces I traced. You can see the drawing is intact, and I have the templates I need to mark



**Bill Agriesti borrows a technique from another how-to hobby — sewing — to transfer drawings.**

around the edges onto the workpiece.

The ponce wheel has a series of teeth around the perimeter of the wheel that perforate the drawing, leaving indentations on the posterboard.

— Bill Agriesti  
Sarasota, Florida

### Freshly Made Beds

I thought you might like to see my interpretation of the Cantilevered Platform Bed from your *February 2009* issue. I had some bamboo plywood left from the kitchen cabinets and, since the floor in the bedroom is carbonized bamboo, I thought it would go together well. I really enjoy your magazine and look forward to each new issue.

— Louis Yearby  
Desert Hot Springs, California

Your Platform Bed article in the *February 2009* issue gave me the urge to build one for my daughter. However, the complicated base was a bit

much, so I looked around and replaced it with 1" pipe. [The top photo] is my version. Thanks for the ideas.

— Fredrick Peterkin  
Gainesville, Florida

### Left-Handed Trick

Just received my *October 2009* edition and saw Michael Gaule's Tricks of the Trade wedge-style bench vise. Not having my new workbench ready to go, this will come in handy. One thing you should point out, however, is that, as pictured, it is for a left-handed person. This assumes you want the workpiece close to the edge of the bench.

— Dick Culp  
Bainbridge Island, Washington

Interesting article about laminate spacers [Tricks of the Trade, *August 2009*], but in my experience, I have found something better than newspaper. We have tried the newspaper trick and, on occasion, small pieces or a piece of newspaper tears off. Removing the torn piece of newspaper is almost impossible, and if you do not realize a piece has torn off, the leftover piece has a chance to show in the finished laminate.

A much better solution is plastic mini-blind strips. Disassemble the mini-blind, saving the plastic blind strips. When laminating, place the curved (humped) portion up, leaving just the edges touching the contact cement. When removing the strips, because they are plastic there is no problem with tearing, sticking or anything, and replacement is cheap and easy.

— Lee Carlile  
St. George, Utah

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# Questions & Answers

## No-Slip Shop Tips

### THIS ISSUE'S EXPERTS

**Bill Hylton** is a Pennsylvania woodworker and author of several woodworking-related books. He is a long-time contributor to *Woodworker's Journal*.

**Chris Marshall** is field editor of *Woodworker's Journal* and author of several books on woodworking.

**Rob Johnstone** is editor in chief of *Woodworker's Journal*.

**Michael Dresdner** is a nationally known finishing expert and the author of *The New Wood Finishing Book*.

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**Q** While routing half-blind dovetails, the bit slid down onto the jig after the third drawer. I cleaned the collet and started again. After about two more drawers, the bit had slipped again. I had to reset the bit after about every other set of drawers. I needed eight. The router is an older one, but it has never given me a problem like this. Any help on what the problem might be?

Ron Wagner  
Citrus Heights, California

**A** The likely cause of your problem is a worn collet. But start with the bit. Measure its shank with a machinist's caliper; its diameter should be spot on, but two or three thousandths undersize is acceptable. That is, a 1/4" shank should be 0.250" in diameter; if less than 0.247", replace it and see if the problem is solved. If the bit shank is accurately sized, the culprit is the collet, and you need to replace it instead.

An obvious follow-up question is: "If the problem is the collet, why doesn't it occur with all my bits?"

The dovetail is a harbinger. As a collet wears, it doesn't grip a bit tight enough to ensure it spins at the same speed as the router motor. Under load, the bit slows down, but we don't notice that happening. Scoring or galling on the shank are signs



of this, but again, we don't always notice. Eventually, the grip deteriorates to the point that bits begin to work out of the collet. Ah, then we notice!

Because a dovetail bit is designed to pull itself into a cut, trying to burrow deeper, and because the dovetail shape traps the bit in the cut, it's more prone to be pulled out of the collet by the resulting tension stress.

— Bill Hylton

**Q** What is the easiest way to make case parts square for parts that won't fit between the miter gauge and the blade on the table saw? As one solution, I'm considering building an infeed table (a reverse of the outfeed table in the *February 2009* issue.) Is it safe to make an infeed table for the table saw? Am I missing another method or something very obvious?

Using the table saw on bigger parts, I can make great parallelograms by just using the fence, but perfect squares are another story! And there really isn't much room between the miter gauge fence and the saw blade.

John Weaver  
El Cajon, California

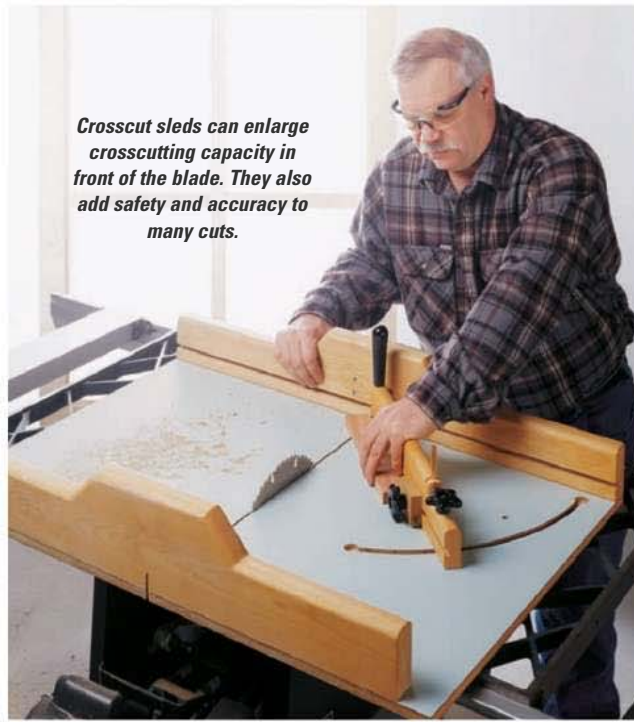
**A** While adding an infeed table to your saw seems plausible, I don't advise it for a couple of reasons. First, adding a table in front of the

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- Model number R4511 Ridgid 10" Table Saws with date codes between CD0829 and CD0837; (866-539-1710).
- Model number 27017 Rockler LED Magnifying Light Kit and model number 26429 Rockler LED Spotlight Light Kit purchased between 3/27/09 and 10/25/09; (800-260-9663).
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saw could block your access to the saw's front controls, particularly the Off switch. That would not only be inconvenient but also potentially dangerous when you need to shut things down quickly. Second, placing your body farther away from the front of the saw also compromises your ability to control workpieces against the rip fence when you switch from crosscutting to ripping tasks. You want to make sure you can always keep workpieces held tightly

against the fence and guided carefully. Instead of an infeed table, I suggest you make a crosscut sled outfitted with runners that fit in the miter gauge slots. A sled will add more usable space in front of the blade for those wider

crosscuts, plus you can use it for cutting small parts, mitering and even dadoing. It's a safe and proven accessory, and plans are widely available for building them.

— Chris Marshall



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For simply sending in his question on slipping router bits, Ron Wagner of Citrus Heights, California, wins a **Steel City 13\"/>**

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# Stumpers



*Readers went back to the shop — the auto shop — to answer our latest mystery.*

“The tool shown” in our October 2009 issue “is a babbitt bearing scraper,” said **Mike Althoff** of Pickerington, Ohio. Babbitt, according to **Bill Needham** of Morris, Illinois, “is a soft metal alloy,” also known as “white metal.”

“The replaceable bearings used today were not available, and mechanics had to heat and pour molten metal into the bearing cavities, then shape the metal to the contours of the crankshaft using these types of scrapers,” explained **Bob Dancer** of Dexter, Michigan, who also identified the tool (top photo) belonging to the Gebharts of Arlington, Virginia.

“When the crankshaft is rotated and the bearing is removed, any tightly rubbing high spots will be revealed by the Prussian blue pattern,” said **Bob Hillskemper** of Yorba Linda, California. “One of the three sharp edges of the

tool is then used to scrape metal off of these high spots. The process is repeated until the Prussian blue patterns reveal that all surfaces are mating correctly.”

Bob also said that he uses his tool occasionally “to remove wood glue from a project I have just glued up, especially in any tight corners.” **Jim Paisley** of San Antonio, Texas, had more historic memories. His grandfather was a farmer and a mechanic, and “he also used them to mold bearings that he poured for some of the shafts on his horse-drawn combines. He told me that they would use pork rind on the bearings of a Model T to get them home — but only in a pinch.”

—Joanna Werch Takes



**Winner!** Dennis Burke of Jasper, Alabama, wins a Porter-Cable 6" Variable-Speed RAROS Kit (Model 97466). We toss all the Stumpers letters into a hat to select a winner.



**What's This?**

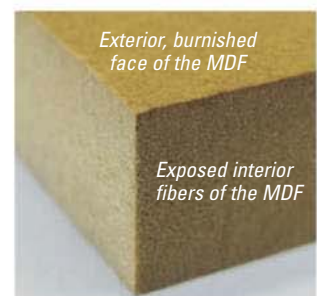
This 13" tool belonged to a great-grandfather of the wife of Oliver Cook, of Knoxville, Tennessee. Know what it is? Send in your answer for a chance to win a prize!

information regarding sustainable lumber and lumber products.

— Rob Johnstone

**Q** I am in the process of finishing some MDF boards with clear varnish. The cut edges, the inner fibers of the MDF, are very porous and need several coats of sealer. Could you suggest other methods or different sealers that would have a faster buildup?

Kenny Roberts  
Vincennes, Indiana



**A** The quickest and, I think, best method is to seal the edges first with thinned wood filler or putty that is the same color as the MDF. Rockler sells a nice one called Wunderfil™ that you can thin with water and that dries quickly. Make sure you buy the type of putty that dries hard and must be sanded.

Another quick method is to seal the edges with hot hide glue, applied fairly thick with the excess wiped off. Like the filler, it should be sanded after it is dry.

— Michael Dresdner

Forest Stewardship Council:  
[www.fsc.org](http://www.fsc.org)

Yale Program on Forest Policy:  
[www.yale.edu/forestcertification](http://www.yale.edu/forestcertification)

The Longleaf Alliance:  
[www.longleafalliance.org](http://www.longleafalliance.org)

Rainforest Alliance:  
[www.rainforest-alliance.org](http://www.rainforest-alliance.org)

**Q** Could you direct me to resources explaining efforts to create sustainable forests in the kind of woods a woodworker would use?

Will Highfield  
Lafayette, Colorado

**A** There are many websites that speak to what is being done for sustainable forest management. It is harder to find solid information on where and how to buy lumber

and wood products produced in a sustainable manner. The Forest Stewardship Council has a page in its site that will search for FSC certified wood products. At this time, if a woodworker wants to know with certainty that a piece of lumber has been grown and harvested in a sustainable manner, the FSC logo is the best evidence.

At left is a list of websites that will provide some



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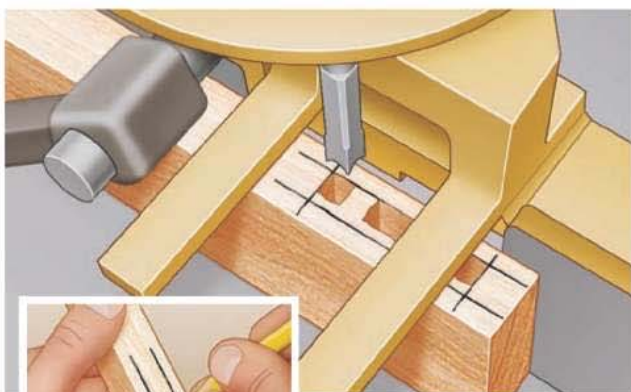


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# Tricks of the Trade

## Canadian Measuring Tricks



### Centered Mortises Without Measuring

Borrowing from my technique for cutting centered grooves on a table saw, here's how I make centered mortises without having to find the center first. I draw a pair of parallel pencil lines along the mortise area, using my index finger as a gauge for setting the pencil line locations. (It doesn't matter if these guidelines match the final mortise width.) I center my mortising machine chisel over these lines by eye, lock the fence and cut the mortise as usual. Then I flip the workpiece around to the other face and cut it again. Two rounds of cuts will center the mortise perfectly on the workpiece thickness. No measuring!

Charles Mak  
Calgary, Alberta

### Safety First

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

### Math Magic Formula for Spacing Fasteners

When you want to space fasteners evenly along a workpiece, here's an easy solution for calculating those distances: Take the number of fasteners you plan to install, add one and divide by the length of the joint. For instance, if the joint is 36" and you plan to install five screws,  $5 + 1 = 6$ ; 36" divided by 6 means the fasteners should be spaced every 6" — at 6", 12", 18", 24" and 30". If you want the first and last screws to be

inset from the ends of the workpiece a certain distance, subtract these two distances from the joint length first, then use the first screw as your starting point and apply the same formula for the remaining screws. Sooner or later you'll end up with fractional measurements, but the principle is the same. To skip the fractions altogether, use a metric tape measure instead.

Serge Duclos  
Delson, Quebec



A no-clog trick for CA glue bottles

### Tip-top Tip for Keeping Glue Tips Cleaner

Until I discovered this trick, I used to get frustrated cleaning the dried, accumulated glue off the nozzles of my CA glue bottles with a pliers — or worse, replacing the nozzles. Here's my solution: I wipe a thin film of petroleum jelly all

around the nozzle before replacing the cap. The glue won't stick to the jelly. Now, my nozzles are clean and the tips are clear whenever I need some glue.

Amy Nielsen  
Maple Valley, Washington

**PICK  
OF THE  
TRICKS**



### Apply Wipe-on Poly with Cotton Pads in Pantyhose

I used to use balled-up cotton rags to apply wipe-on poly, but I've recently discovered a much better applicator. All you need are a bag of those inexpensive, circular make-up remover pads and some old knee-high pantyhose. I slip two or three of these cotton pads inside the stocking

and wrap up the excess. The cotton accepts a good charge of poly that's still easy to control, and the pantyhose keeps the cotton fibers out of the finish coat. It also lays down a nice, level coating without streaks.

Richard Gaudreau  
Sanford, Maine





*Cope and stick double-wide rails and stiles — it will save you time and reduce tearout.*

### Double-wide Rails Fulfill Two Shop Functions

When I'm making rails for cabinet doors using my cope-and-stick router bits, I can eliminate tearout from the end-grain cope cuts and work more safely at the same time if I mill two rails from one wide workpiece. Here's how to

do it: Start with a workpiece that's twice the width of the rails plus about 1/2". Crosscut it to the final rail length. Cope the ends first, then mill the sticking profile along both edges. Rip the workpiece down the middle, and you'll

have two tearout-free rails a little wider than you need. Trim them to final width, or wait to do this until after your doors are glued up and ready for final sizing.

Earl L. Hanson  
Chase City, Virginia



### Winner!


In addition to our standard payment (below) Richard Gaudreau of Sanford, Maine, will also receive a Stanley-Bostitch CPACK300 Combo Kit for being selected as the "Pick of the Tricks" winner. We pay from \$100 to \$200 for all tricks used.

To join in the fun, send us your original, unpublished trick. Please include a photo or drawing if necessary. Submit your Tricks to Woodworker's Journal, Dept. T/T, P.O. Box 261, Medina, MN 55340. Or send us an email: [tricks@woodworkersjournal.com](mailto:tricks@woodworkersjournal.com)

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## New Vistas in Woodworking



**Chairmaker Scott Morrison is ready to launch his Butterfly Joint™, which he created to strengthen chair joinery and add beauty.**



**Supplies for Scott's Butterfly Joint: 1/2" straight spiral bit, 5/8" roundover and Scott's template.**

## New Joint

### Chairmaker's Butterfly

Woodworker Scott Morrison has created a joint he calls the Butterfly™, and he hopes it makes a name for him in the woodworking world.

"I wanted something unique, and something I could call my own," Scott said.

For him, this meant not only coming up with his own furniture designs, but also new technical ways of doing things. He spent two years of trial and error in attempting to create his own signature joint. Citing his inspiration from Sam Maloof, Scott said that, "like most woodworkers, I drew inspiration from those who came before me — my goal was to take it one step further." Maloof was known for a particular style of joinery and, Scott said, "I



**The Butterfly Joint has curved edges and transfers a sitter's weight into a chair's vertical grain.**

wanted to do at least as good, if not better, and I think I have."

Scott's Butterfly Joint uses two router bits — a 1/2" straight spiral bit and a 5/8" roundover — and a template, which he is negotiating to have produced. (Check [www.finewoodworker.com](http://www.finewoodworker.com), Scott's site, for details.)

He has used the Butterfly in several chair designs, and likes that the joint, which goes into the vertical grain of the chair leg and does not rely completely on glue, supports the entire weight of a person sitting in the chair. Chairs, he said, must be extremely durable to support a human body (in the case of rocking chairs, a body in motion). "Other chairmaking joints rely on mechanical fasteners, and they break down over time."

Although he himself is a chairmaker and says he doesn't have time to explore other uses for the joint, he added, "I don't see why it couldn't be used as a really pretty joint on a table." Scott

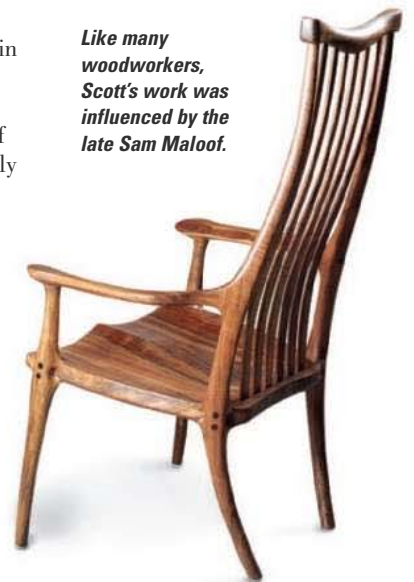
doesn't, however, think the Butterfly Joint's curved parts could be carved by hand: "I'd like to meet the guy who could."

Instead, he cites the accessibility of the router and bits used in making the joint, and suggests that it can be adapted to uses either simple or complex, with more intricate curvatures. "You can use your own style, and make it something you want it to be," he said.

Scott's website also includes a video on making the Butterfly Joint. What's next? "I want to continue evolving my own style, and I hope I'm never done."

— Joanna Werch Takes

**Like many woodworkers, Scott's work was influenced by the late Sam Maloof.**



*Using donated equipment and reclaimed wood, a Fridley, Minnesota teacher is using woodturning as a means to develop skills and confidence.*



## Students' Turn Loving Their Lathes

Bob Carrigan's students (12 of them, with varying abilities) love their lathes.

Since receiving three sets of JET mini-lathes and stands, plus three sets of turning tools, last school year in a donation from local turner Alan Lacer and prominent collector Norton Rockler, the Fridley, Minnesota, students have focused their efforts on turning pens.

They give most of them away and show off their skills by teaching parents,

younger kids and community members.

Much of the class's wood comes from Bob's father-in-law's land. "We had some barn wood from my wife's grandparents' old barn, and when we started to turn it on the lathe, my student said, 'I smell cows.' You couldn't smell it until you started turning," Bob said. The students sealed that pen and gave it to Bob's mother-in-law.

"I don't think they've had a real sense of doing that, making something and giving it away — that in itself is pretty

wonderful," Bob said.

He also likes that woodturning is a hobby the students can carry into their adult lives, even without access to a full shop — and he'd like to see it incorporated into other schools' transition programs. (If you're interested, Bob's phone number at Fridley Public Schools is 763-502-5065.) "We could do it all the time. They love it," Bob said.

*Shop Talk continues on page 20 ...*

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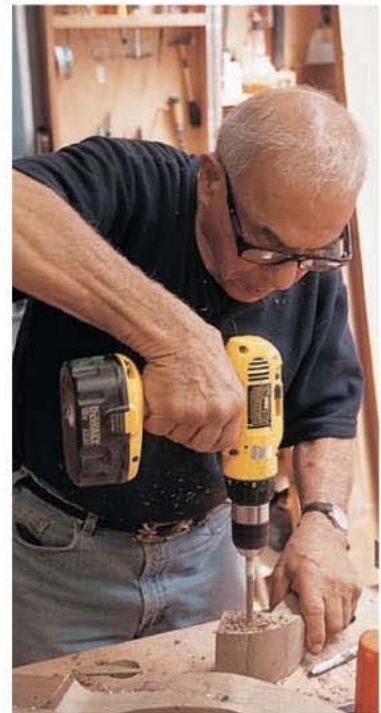
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# Shop Talk continued



**Senior editor Joanna Werch Takes (to Sam's immediate left) enjoyed both the wisdom and friendship of Sam Maloof during a weekend retreat at the Anderson Ranch back in 2000.**



"Sam's enthusiasm for his craft was unfeigned and uncluttered by excessive ego. I first met Sam in a bathroom at a major woodworking show in the 1990s. We introduced ourselves and chatted for several minutes — until his wife called into the bathroom asking if he was OK. We both got a good chuckle out of that."

— Rob Johnstone  
*Woodworker's Journal*

## Sam Maloof: *Remembered*

By now, most of the woodworking world knows that Sam Maloof passed away in May 2009. His loss marked the passing of a great woodworker: his work is on display in the Smithsonian Institution, he had received the MacArthur Genius Grant, and his rocking chairs offered Presidential seating to both Jimmy Carter and Ronald Reagan.

Sam, who was 93 at the time of his death, was an inspiration to decades' worth of woodworkers. They followed the examples of the softly flowing lines in the rocking chairs that were his specialty — and some of them followed Sam to classes or seminars, like his annual visit to the Anderson Ranch. That's where I met up with Sam, when *Woodworker's Journal* sent me out to cover one of his visits there in summer 2000.

Sam, in addition to being a master woodworker, was an

all-around nice guy. He answered questions easily; he used self-deprecating humor as he "eyeballed" it on the band saw — and passed on the advice to do as he said, not as he did, regarding safety standards; and he had fun.

Although serious about making money from his work — Sam had years' worth of orders for his chairs stacked up even when he reached his early 90s (and capable assistants in his woodshop to complete them), Sam was never snooty about it, choosing to identify himself not as an artist, but as a woodworker — and reminding people that he flunked his high school shop class, held during the Great Depression, because he couldn't afford to buy the supplies.

He did overcome that impoverished background to achieve monetary success — at least enough to treat Gail Fredell (at the time, head of Anderson Ranch's woodworking program), her shop assistants and a tagalong

woodworking magazine editor to ice cream in Aspen during an evening of gallery crawling — an evening where the then-80-something Sam was indefatigable in comparison to 20- and 30-somethings.

One has to wonder what the future of woodworking will now hold for those 20- and 30-somethings. Not only did Sam Maloof pass away in 2009, but so did other woodworkers with a major impact on the field, such as James Krenov and Alan Peters, and Norm Abram announced the end of an era with the cancellation of *The New Yankee Workshop*.

Sam Maloof was the kind of woodworker who would invite you to stop by his place some time if you were in the area — and you knew he meant it. (I never got to take advantage of this invitation, but WJ's former art director, John Kelliher, did.) He was the kind of woodworker who was a great inspiration in both his work and his life. He'll be missed.

— Joanna Werch Takes



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# Woodturning

## Friction Polish — Fast and Friendly

By Rob Johnstone

*Sometimes, a product that works too quickly sacrifices quality. In the case of friction polish on the lathe, a fast finish is a fine finish.*



*The author applies his liquid friction polish to a spinning maple bowl. As the friction spreads and polishes the product, a smooth, shiny finish begins to appear.*



I just can't deny it — I am an instant gratification sort of woodworker. So, when I am looking for a clear finish on my turned pieces — and I predominantly turn bowls — I almost always reach for a friction polish. They are easy to apply, build up quickly and look great.

### What's a Friction Polish?

A friction polish is designed to be applied to wood and then burnished to make the product flow — to be smoothed out over the prepared surface. Burnishing (rubbing vigorously with a cloth or piece of ultra-fine steel wool) can be hard work on a flat piece of wood. But it's pretty easy if the wood is spinning on a lathe. For that

reason, friction polish is a real favorite for turners. Common formulas for friction polish feature a combination of shellac and a wax of some type. They can be formulated in a liquid or found in bar form — like the widely used HUT™ Products Bar.

### Just Do It

There are a couple of ways to apply a liquid friction polish. You can wipe on a light coat while the piece is stationary on the lathe (or off of the tool), then spin the piece and use a cloth dampened with the polish to smooth out and flow the finish evenly across the piece. This is an instance where light applications are better than heavy coats.

As a “plunge right in there” type, I prefer the second method: applying the finish with a soft cloth right to the spinning bowl. I use a moderately fast speed and just wipe it on. I like to have a strong directional light aimed at the piece, so I can see the change as I apply the product.

Different brands of friction polish vary a bit as to the proper mode of application — so read their instructions and experiment in order to get your best results.



*Friction polishes are a woodturner's secret weapon when it comes to a fast, beautiful finish. They work well on natural (clear finish) or stained wood.*



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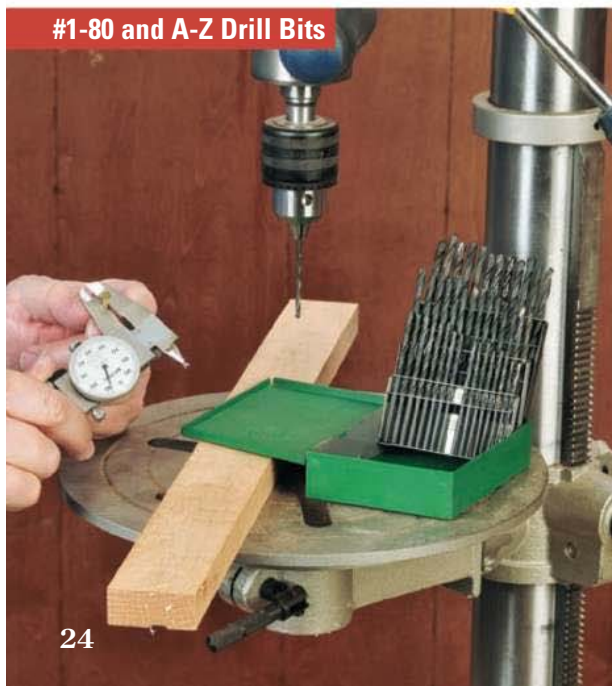
# The Top 10

By Sandor Nagyszalanczy

*Where's my shop pencil? Where's my wrench? The dowel doesn't fit in this hole! What's  $(\frac{3}{32} + \frac{7}{64}) - \frac{3}{8}$  divided by 5? Oh, #!\*&\*@#!!*



Sealable Plastic Container



#1-80 and A-Z Drill Bits

We all have our pet peeves: TV remotes with buttons so small you need mouse-sized fingers to press them; socks that never seem to match up in pairs; raisins in the bran cereal that all sink to the bottom of the box. Unfortunately, life's little annoyances aren't limited to the household. They're just as numerous in the workshop. Obviously, it's frustrating when you cut parts wrong or if a router or planer tears out grain on a board you have no replacement for. But it's the little things that can drive you crazy: Never finding a pencil when you need it. Curled up sandpaper discs that won't stay on your random-orbit sander. And what woodworker hasn't had their blood pressure raised when tools or parts seem to suddenly disappear, as if by some evil magic? (I swear it was right here just a second ago!)

Why do we put up with these little aggravations? Perhaps because they're minor enough that we don't spend the time to deal with them. But there are clever ways to make your shop experience more pleasant and less stressful by tackling these little annoyances one at a time. In the following paragraphs, I've listed my own top 10 workshop annoyances and the solutions employed to tame them in my shop. As the list of woodworking peeves is likely endless, this is only a start (how about sending *Woodworker's Journal* your solutions for workshop annoyances?).

***Simple solutions, whether found in the hardware store or the housewares aisle, can improve your shop experience by eliminating some of the most nagging annoyances.***





Mask with Exhalation Valve

# Workshop Annoyances

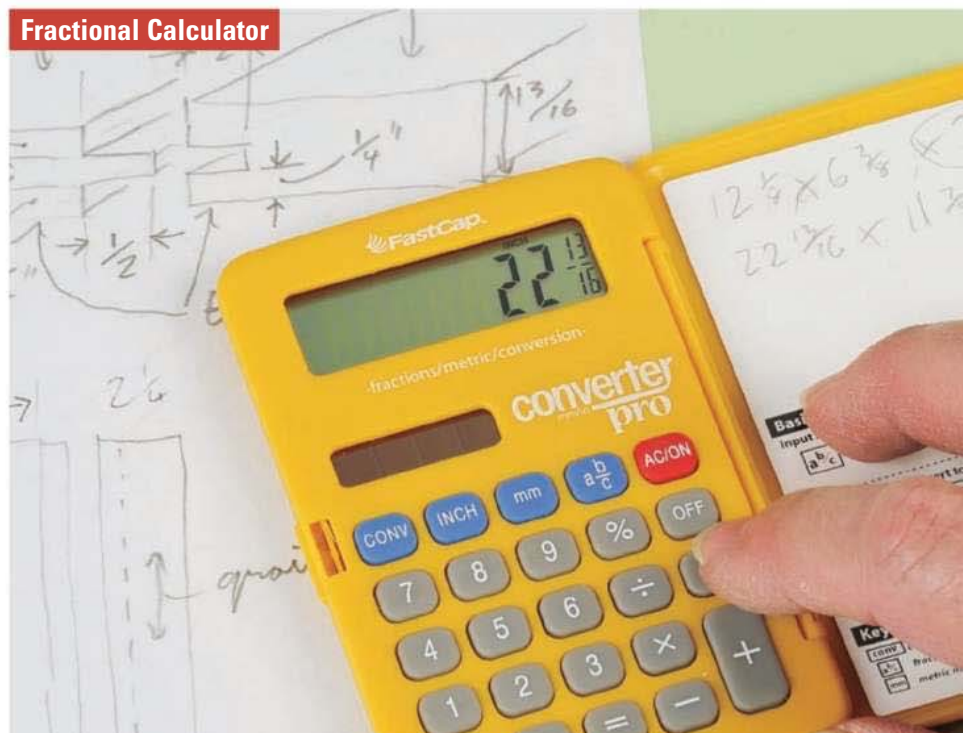
**PROBLEM:** Every time you need to tighten a chuck or change a blade, you waste time trying to find the right wrench.  
**SOLUTION:** Get a dedicated wrench/screwdriver for common adjustments and keep it at the tool at all times. For steel and iron tools, stick a small rare-earth magnet to the machine's base or the side of the drill press head, then simply "stick" the wrench, chuck key or other tool to it when it's not in use. For non-ferrous-metal machines or tools, you can use PSA-backed hook-and-loop fastener dots to attach the tool directly to the machine. Just make sure to position the magnet/fastener so that if the tool accidentally falls off, it won't interfere with operating the machine.

**PROBLEM:** You don't have or can't find oft-used tools and supplies when you need them.  
**SOLUTION:** One way to keep tools handy is to keep different groups of them in inexpensive portable caddies like you can buy in the housewares department of a hardware or variety store. Molded plastic caddies with built-in handles are made for organizing and storing cleaning supplies and other household goods. But they're equally as useful for workshop items. So, for example, when you need your marking and layout tools (calipers, 6" rule, dividers, tape measure, etc.) you simply grab your "layout tool" caddy and take it right to the benchtop or worktable.

You'll have all the tools you need and are less likely to lose tools, as each goes back into the caddy when you're done. When doing household repairs or working away from the woodshop, it's particularly great to have all the stuff you need at hand, so you don't have to keep running back to the shop for things you've forgotten. Tool caddies are also terrific for organizing screws and fasteners, glues and applicators and other shop supplies. Larger caddies or trays can be just the ticket for keeping small parts together, especially when moving them around the shop for different machining operations.

**PROBLEM:** You can't find a sharp pencil when you need it to save your life.  
**SOLUTION:** Attach the pencil to a small retractable reel badge or key holder: the kind used to hold security and event passes (available at office supply stores and online at [amazon.com](http://amazon.com)). Get one with a belt clip that you can attach to your shirt or work apron (slipping a small rubber band over the shank of the pencil helps keep it in the holder's plastic loop). When you need to write a note or mark a part, just pull the pencil down and use it — the pencil always stays with you, since you can't set it down. Alternatively, buy a

Fractional Calculator





**Portable Caddies**



**Rare Earth Magnet**

bunch of badge reels and attach them near your work areas, or even to specific tools (always in a safe location, where the pencil won't get into the machine if the reel fails or the pencil falls off).

**PROBLEM:** Parts get cut to the wrong dimensions because you've added up measurements incorrectly.

**SOLUTION:** Get a fractional calculator — an electronic calculator that lets you work with fractions instead of tenths, hundredths and thousands of an inch. This kind of calculator lets you add up numbers and get the answer as a fraction. You don't have to remember the decimal equivalents for fractional numbers (how many thousandths is  $2\frac{1}{2}$ "?) and then convert them back and forth — another source for measurement and calculation errors. Sometimes sold as “builder's calculators,” even the most inexpensive models allow you to add, subtract, multiply or divide fractions with mixed denominators ( $11/16$  and  $3/4$ , for example) and display the results as fractions, typically down to 64ths of an inch.

**PROBLEM:** Your sandpaper sheets and discs keep curling up, and sanding belts don't track evenly.

**SOLUTION:** To prevent moisture from adversely affecting your sandpaper products, store them in a sealable plastic container. Storage boxes and tubs come in a staggering array of styles and sizes; check the housewares section of your local department store. Keeping all your abrasive products in one of these sealed containers helps keep sandpaper sheets and discs flat and easier to mount

and use. Also, fabric-backed drums stay rounder and sanding belts kept dry will track more evenly. If you live in a really wet climate, choose a container with a tight-fitting lid. To prevent high temperatures from affecting the lubricating coatings found on some sandpapers, store your container in a cool place during the summer.

**PROBLEM:** The holes you drill are often just a tad too big or too small for dowels and fasteners.

**SOLUTION:** Buy an indexed set of #1-#80 numbered or A-Z lettered drill bits. A common part of a machinist's tool chest, these twist bit sets include many bits that fall between standard fractional sizes. For example, say you want to drill a hole for a hinge pin on a jewelry box. A standard  $1/8$ " bit makes a hole that's too tight for the pin, but a  $9/64$ " hole's just too loose. Both the #29 and #30 size bits in a numbered bit set fall between  $1/8$ " and  $9/64$ ", allowing you to drill a hole that's just right for your hinge pin.

**PROBLEM:** When you want to shut off a benchtop or stationary machine, you end up fumbling around for the Off switch.

**SOLUTION:** Install a safety switch on the machine. This kind of electrical machine switch has regular push-button-type On and Off buttons, but with an oversized paddle that actuates the Off switch. All you need to do is thump the switch with your palm or fist to shut off the tool. I installed one of these on my router table recently, and I found it most convenient to mount the switch with the Off paddle about 20" above the floor, so I can turn the router off with my knee, thus keeping my hands free and my attention focused on the tool. A safety switch is not only convenient, but could also save you behind if you need to turn a machine off in a hurry in the case that something goes awry.



**Retractable Reel Key Holder**

**PROBLEM:** You want to protect your lungs from fine wood dust in the shop, but wearing a mask fogs up your glasses.  
**SOLUTION:** Choose filter masks that feature an exhalation valve. These masks allow the warm, moist exhalation from your breath to escape instead of creeping under the upper edge of the mask and fogging your safety and/or prescription glasses. Disposable masks with exhalation valves are affordable and comfortable to wear. To get the best lung protection, as well as prevent fogging, press the disposable mask's nosepiece down so that it conforms closely to the contour of your nose and cheekbone. Alternately, choose a rubber half-mask respirator that uses replaceable filter elements. For the best fit with a half mask, choose the size (small, medium, large) that fits your face best.

**PROBLEM:** When vacuuming up around the shop, you inadvertently suck up screws, small tools and chunks of wood big enough to clog or damage the vacuum's hose.  
**SOLUTION:** Fastening a piece of metal screen over the end of the vac's hose keeps larger items out while permitting sawdust and dirt to be sucked through. Cut out a square piece of metal screen or hardware cloth (available at hardware and home supply stores) that's about two inches larger than the diameter of the vacuum hose. I found that screen with a

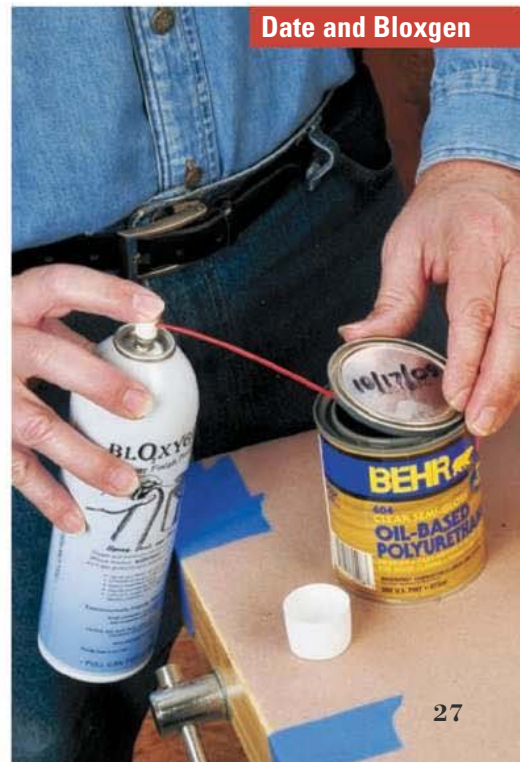
1/2" x 1/2" mesh is about right to trap most things you want to keep, while not clogging up with sawdust too easily. Wearing thick work gloves, press the screen over the end of the hose nozzle so it covers it like a small cap. Then, trim off the excess and tape the screen in place with duct tape.

**PROBLEM:** You want to varnish or shellac your project, but you don't know if the can of finish you have is too old to be good any more.  
**SOLUTION 1:** Here are two things you can do to prevent a too-old finish from ruining your project: 1. Write the date on each can of finish the day you purchase it (TIP: don't buy any "new" cans of finish that have a thick layer of dust on them; who knows how long they've been sitting on the store's shelf). Some finishes, like shellac, may have a shelf life as short as six months, while others may last a year or two. When in doubt, try the finish on a scrap of wood, to make sure it applies and dries properly.  
**SOLUTION 2:** You can keep finishes from skinning over and oxidizing by filling the empty space in an opened container with an inert gas, such as Bloxygen.

*Sandor Nagyszalanczy is a furniture designer/craftsman, writer/photographer and regular contributor to Woodworker's Journal. His books are available at [www.sandorsworkshop.com](http://www.sandorsworkshop.com)*



**Screen Filter**



**Date and Bloxygen**

[www.woodworkersjournal.com](http://www.woodworkersjournal.com)  
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# Weekend Tambour

*Here's the perfect scrapwood project. The author says that his unique gift boxes have been used for everything from wine to candles. The box always finds a home — long after the “gift” is gone!*



# Gift Box

By Kenneth Minnaert

**M**y most satisfying and enjoyable woodworking projects involve making decorative boxes using a variety of designs, joints and colorful hardwoods. These boxes make attractive and unique packages for a wide variety of gifts and (I've heard) tend to outlast those gifts by many years. I have made them for friends and family members, and I've donated them to local charity fundraising events as well. They're inexpensive, keep me busy in the shop honing my skills and help me keep my shop "scrap-free."

I have been intrigued with the idea of building one of my gift boxes with a tambour door, but I wanted something more attractive than the traditional half-round, breadbox type tambour you often see at local gift shops. Plus, I didn't want to go to the time and expense of making my tambour strips by routing them to shape with one of the fancy (and expensive) new router bit sets designed specifically for that purpose. So I decided to design and make my tambour strips using a mixture of woods to give a nice texture variety and rich, colorful appearance.

The box is constructed from bubinga and maple and features a tambour sliding door. Other contrasting species, I'm sure, would work just as well. Your overall box dimensions should allow room for the top to retract into its "hiding place." The box that I'll walk you through here is sized to accommodate two regular sized bottles of wine, but you can adjust the size of yours as necessary.

## Getting Started

The first step is to make the right and left sides of the box (pieces 1) from 3/4" maple stock. Keep in mind that the two sides are mirror images of each other; thus the ends and accompanying dimensions must be reversed to make matching sides that face each other.



**The sides of this gift box receive the lion's share of the machining. After rabbets are formed at each end, a template is used in combination with a straight bit and guide bushing to form the track for the tambour door.**

Using a dado blade in your table saw, form the 1/2" rabbets on the inside surfaces of each side to accommodate the top and bottom. Now, use a sharp chisel to form the notch on the insides of each side to accommodate the top plate, as shown in the *Drawings* on the next page.

To create the channel for the door, I made a template from 1/4"-thick Masonite® (see *Drawing* on page 31). Attach the template to one of the side pieces, as shown in the photos at right. I like double-sided self-adhesive discs (available at [www.rockler.com](http://www.rockler.com)) but double-sided carpet tape, as is shown here, also works to hold the template firmly in place.

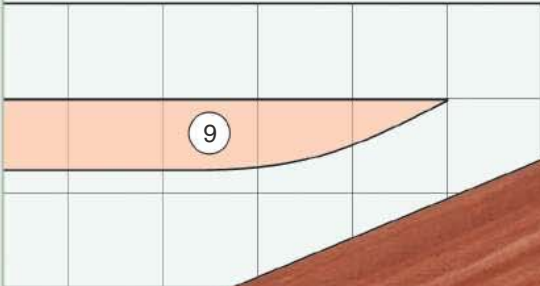
Chuck a 5/16" straight bit and 7/16" O.D. guide bushing in your router, and set your depth to form a 1/4"-deep groove. Rout the groove on one side and



then repeat the process on the second side. Depending on your experience, you may want to use up a little of your shop scrapwood testing this cut. Once you've completed it on both sides, sand the grooves to a smooth inside finish. Apply a furniture wax to the grooves to promote smooth sliding of the tambour door.

Each square equals 1/2"

**Push/Pull Handle Pattern**



**Exploded View**

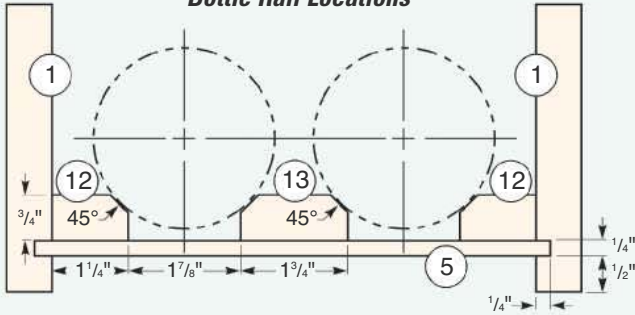


**Tambour Assembly (Side View)**

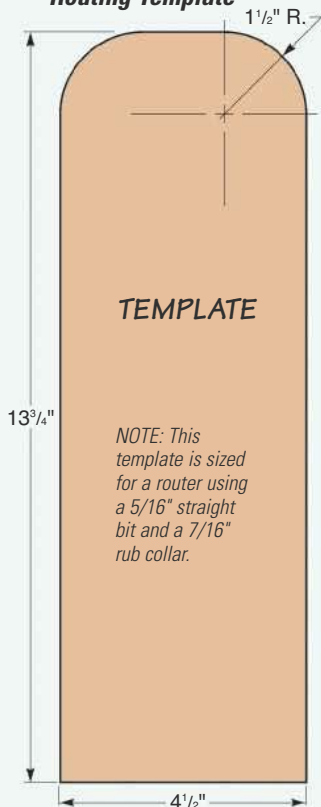
**MATERIAL LIST**

	<b>T x W x L</b>
<b>1</b> Sides (2)	3/4" x 5 3/4" x 16"
<b>2</b> Top (1)	3/4" x 5 1/2" x 9"
<b>3</b> Bottom (1)	3/4" x 5 3/4" x 9"
<b>4</b> Top Plate (1)	1/4" x 2" x 9"
<b>5</b> Internal Box Back (1)	1/4" x 9" x 13"
<b>6</b> Internal Box Top (1)	1/4" x 9" x 3 1/2"
<b>7</b> Maple Slats (14)	1/4" x 1/2" x 8 1/2"
<b>8</b> Bubinga Slats (14)	1/4" x 1/2" x 8 1/2"
<b>9</b> Push/Pull Handle (1)	1/4" x 3/8" x 6"
<b>10</b> Canvas Fabric (1)	6 1/2" x 14"
<b>11</b> Glides (4)	5/8"
<b>12</b> Bottle Rack Side Rails (2)	3/4" x 1/4" x 13"
<b>13</b> Bottle Rack Center Rail (1)	3/4" x 1 3/4" x 13"

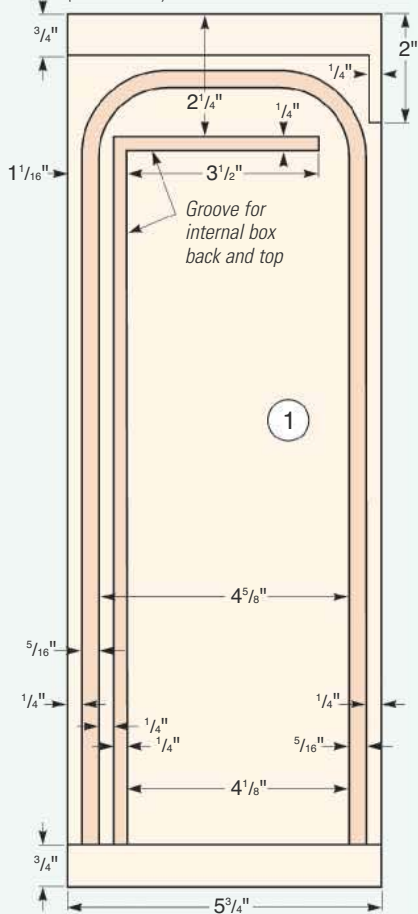
**Bottle Rail Locations**



### Tambour Groove Routing Template



### Side (Inside View)



*“These easy-to-make boxes are inexpensive, keep me busy in the shop honing my skills and help me keep my shop scrap-free.”*

Replace the 5/16" bit with a 1/4" straight bit (same guide bushing) and use a right-angle straightedge template to form the 1/4"-deep grooves on each side for the internal box back and top, as shown in the *Drawings* at left.

### The Top, Bottom and Top Plate

As mentioned, I used bubinga as my contrasting species. Now is the time to cut these pieces to size, including the top, bottom and top plate (pieces 2, 3 and 4). Using a 1/4" straight bit in your router, form a 1/4"-deep dado on the bottom piece, exactly 13/16" from the back edge (so it aligns with the grooves you already cut on the box's sides). This dado serves to hold the bottom edge of the internal box back. Note that the top piece is a tad narrower than the bottom, to accommodate the top plate.

### Internal Box Pieces

To hide the tambour door from view when the box is opened, I added two internal pieces of 1/4" thick Baltic birch plywood (no one will see the edges), the internal box back and top (pieces 5 and 6). You can cut these pieces to size now. When they are assembled within the grooves you formed for them earlier, the top will butt up to the back.

### Cut the Tambour Slats to Size

The tambour door consists of 14 pairs of alternating maple and bubinga slats (pieces 7 and 8). Each of these 28 slats has a 30° chamfer on one edge, as shown in the *Drawing* at left. The best way to create these is to cut 3-ft. lengths of maple and bubinga to the correct width and thickness and form the chamfer along one edge. Since these are small pieces to handle, I recommend clamping each piece in a bench vise and chamfering them with a sharp hand plane. Plane in the direction of the grain and follow up

by sanding the show faces smooth.

Once your chamfered stock is smooth, you can crosscut the pieces to length. You should be able to get four slats from each 3-ft. stick, so you'll need to repeat the process until you have 14 slats of each species. Set the non-chamfered edge of each like-wood slat together, and then alternate pairs of bubinga and maple, matching the chamfered edges. Begin the panel with a maple pair followed by a bubinga pair, and continue the alternating process until complete. This will produce a roll-top panel with nice design character.

### Push/Pull Handle

The only other piece that's made from bubinga stock is the push/pull handle (piece 9). Use the pattern at left to cut this piece to size, and shape the ends using a disc or oscillating sander. Position the push/pull handle on the door's second maple slat. Drill pilot holes through the parts, and drive two small finishing screws through the back of the slat and into the handle. Disassemble the parts — they'll be reattached after the fabric is applied.

### Assembling the Tambour Panel

Bottom weight canvas fabric (piece 10) and Aleene's® Original Tacky Glue® are used to secure the slats in alignment and provide the necessary flexibility to maneuver the curves of the side grooves. These two products are available at fabric stores. It is very important that the slats are perfectly square to ensure that they will close evenly in the enclosure and avoid binding during opening and closing.

I recommend that you make a simple tambour panel jig to hold the slats in alignment during the gluing process. The jig (see *Drawing* and photo on next page) can be made of scrap plywood or

The author uses a simple jig (see Drawing below) to help line up his tambour slats. Three cleats are applied to a piece of MDF, leaving just enough room inside for the completed door. Lines can be added to the jig to ensure that everything stays square.



MDF. On the flat surface of the jig, screw or nail parallel cleats spaced 8 1/2" apart. Make sure the jig base is at least 14"

long, and add a similar cleat at one end.

Perpendicular to and between the edge pieces, draw parallel lines one inch apart across the jig opening. I found that these "alignment guides" helped to keep me on track as I lined up the slats. Now use a straightedge and draw a line down each edge of the slats, about 1/2" in from the edge. You don't want any canvas (or

glue!) to end up in this area, as these ends will ride in the grooves you formed in the sides.

Cut a piece of canvas 6 1/2" wide and several inches longer than the 14"-long panel itself. Once all your slats are installed in the jig, add a bead of the glue to the back of each piece, being sure to keep the glue well inside of the edge

lines you just added. Center the cloth on the jig, leaving approximately 1" spacing on each side so the slat ends extend well beyond the cloth.

Once the slats and cloth are laid up, place a flat board (with a piece of waxed paper between the fabric and the board) over the cloth and install clamps around the assembly to ensure good contact between each slat and the cloth. After the glue dries, trim off any excess cloth from each end of the panel using a razor blade or sharp utility knife.

Sand and slightly round the slat ends to prevent any binding in the grooves. The door might also require some final trimming on the ends to ensure smooth rolling in the grooves.

I suggest that you apply wipe-on polyurethane finish to the glued-up door before gluing up

your box. This allows the finish to be applied evenly along the entire length of each slat, including the ends. At this time, locate the two small screw holes you made earlier, and glue and screw the handle to the maple door slat.

### Fitting Process

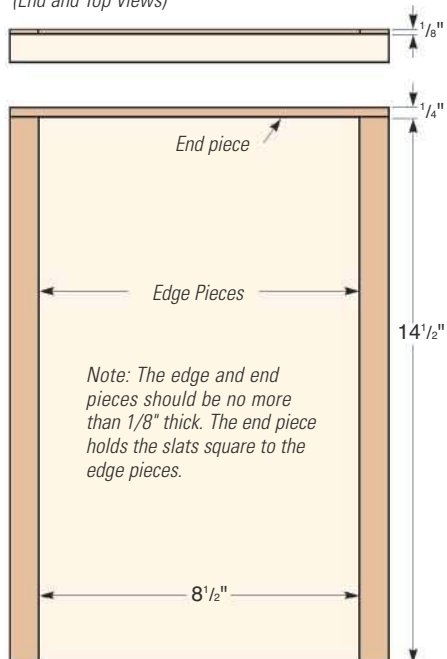
Sand all of your machined pieces to a smooth finish and dry fit the entire piece together before you begin the glue-up. Carefully check that all angles are square and fit properly. Especially check to be sure the door panel rides smoothly in its grooves. A bit of fine trimming and sanding of the door may be necessary.

Now glue and clamp the sides, top, internal box top and back and the top plate for the first assembly, leaving the bottom and tambour door off. (Note: you do want to ensure that the bottom fits snugly in place at this time — just don't glue it.) After the glue has dried from this initial gluing phase, retest the fit of the tambour door, ensuring that it slides well in its grooves and glue the bottom in place, capturing the door in the box.

### Glides and Optional Bottle Rack

The next two steps are strictly optional. Install 5/8" furniture glides (pieces 11) at each of the corners of the bottom to prevent marking or scratching any surface upon

**Tambour Door Jig**  
(End and Top Views)







Once the pieces are lined up in the jig, the author draws a line along each edge (top photo). Both the canvas and glue are kept well out of that area (where the door rides in its grooves). The canvas is then applied (bottom photo) with the help of a flat board, wax paper (not seen) and plenty of clamps.

which the box may be set. In this case, a simple rack was included to hold two regular-size wine bottles. The wine bottle rack consists of two side rails (pieces 12) and a center divider (piece 13). The *Drawing* at the bottom of page 30 shows these additions, which feature 45° chamfers

to nestle the wine bottles. You'll cut one chamfer on the inner edge of each side rail and one on each edge of the center rail. Using double-sided self-adhesive discs, attach each side rail to the internal box back outer edges and carefully place the center divider in the middle. By using

the adhesive discs, it is possible to remove the rails and divider should your gift recipient decide to use the box for another purpose. Two wine bottles will rest snugly between the three rail pieces.

### Finishing Up

Do a final sanding and apply two or more coats of Minwax® Wipe-On Poly Clear Satin Polyurethane, following the manufacturer's instructions. Or, use a similar finish of your choice.

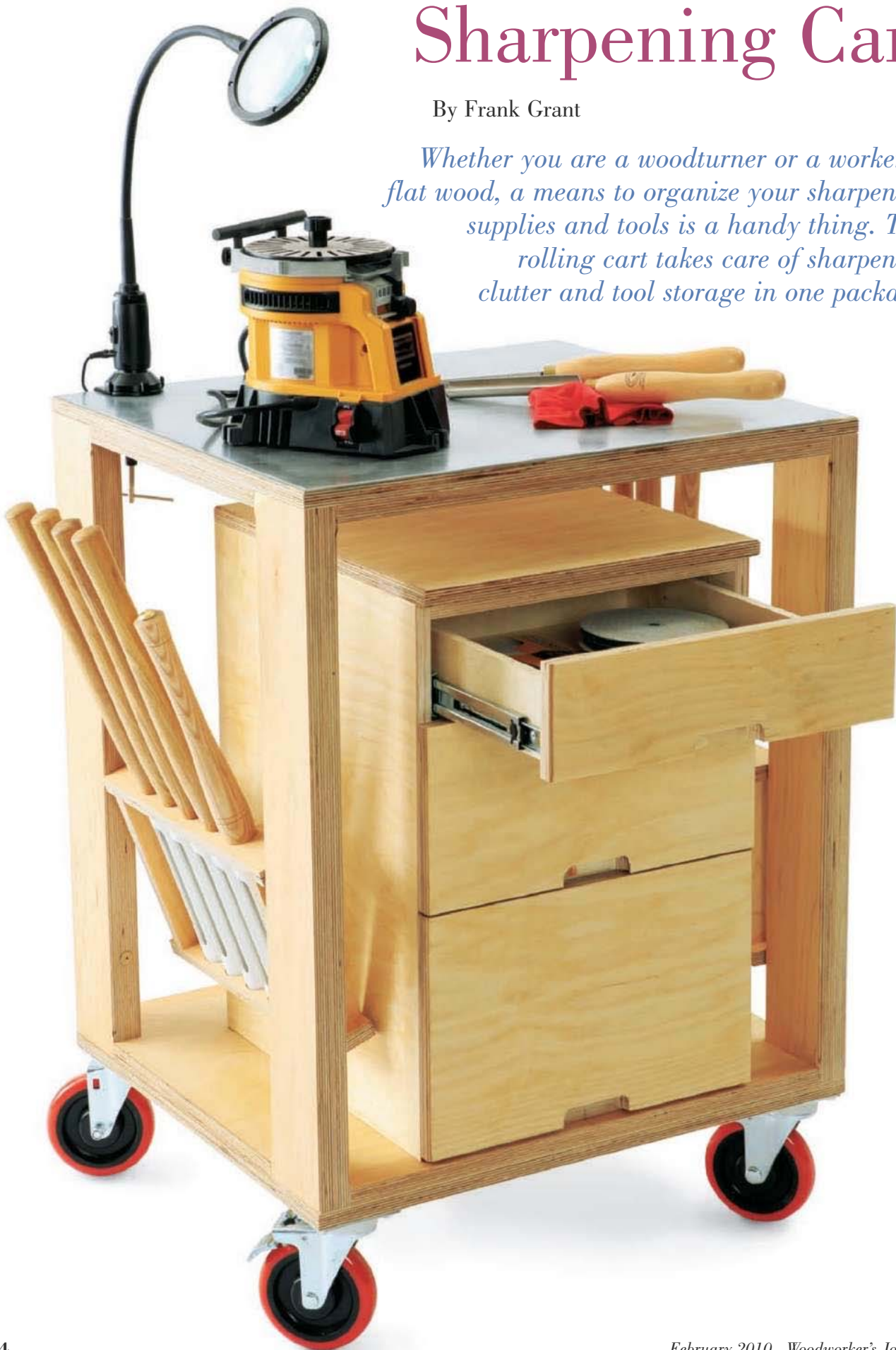
*Kenneth Minnaert is a woodworker based in Olympia, Washington. This is his first article with Woodworker's Journal.*



# Sharpening Cart

By Frank Grant

*Whether you are a woodturner or a worker of flat wood, a means to organize your sharpening supplies and tools is a handy thing. This rolling cart takes care of sharpening clutter and tool storage in one package.*



Sharpening your chisels, plane irons and turning tools is not the glamour task that usually brings a person to woodworking. You almost never hear someone say “Dang, I just can’t wait to get out into the shop to slap a new bevel on that roughing gouge!” But one thing is certain: even though sharpening is not at the top of my “fun things to do” list, woodworking in general is much more fun, not to mention productive and safe, when you are using sharp tools.

So when I was asked to help create a mobile sharpening center for the *Journal*, I was happy to get to the task. While this specific cart has a couple of tool holders hanging on the sides that favor woodturning, it will be equally useful for woodworkers who don’t own a lathe. (It just seemed right to accommodate turners — they sharpen constantly.)

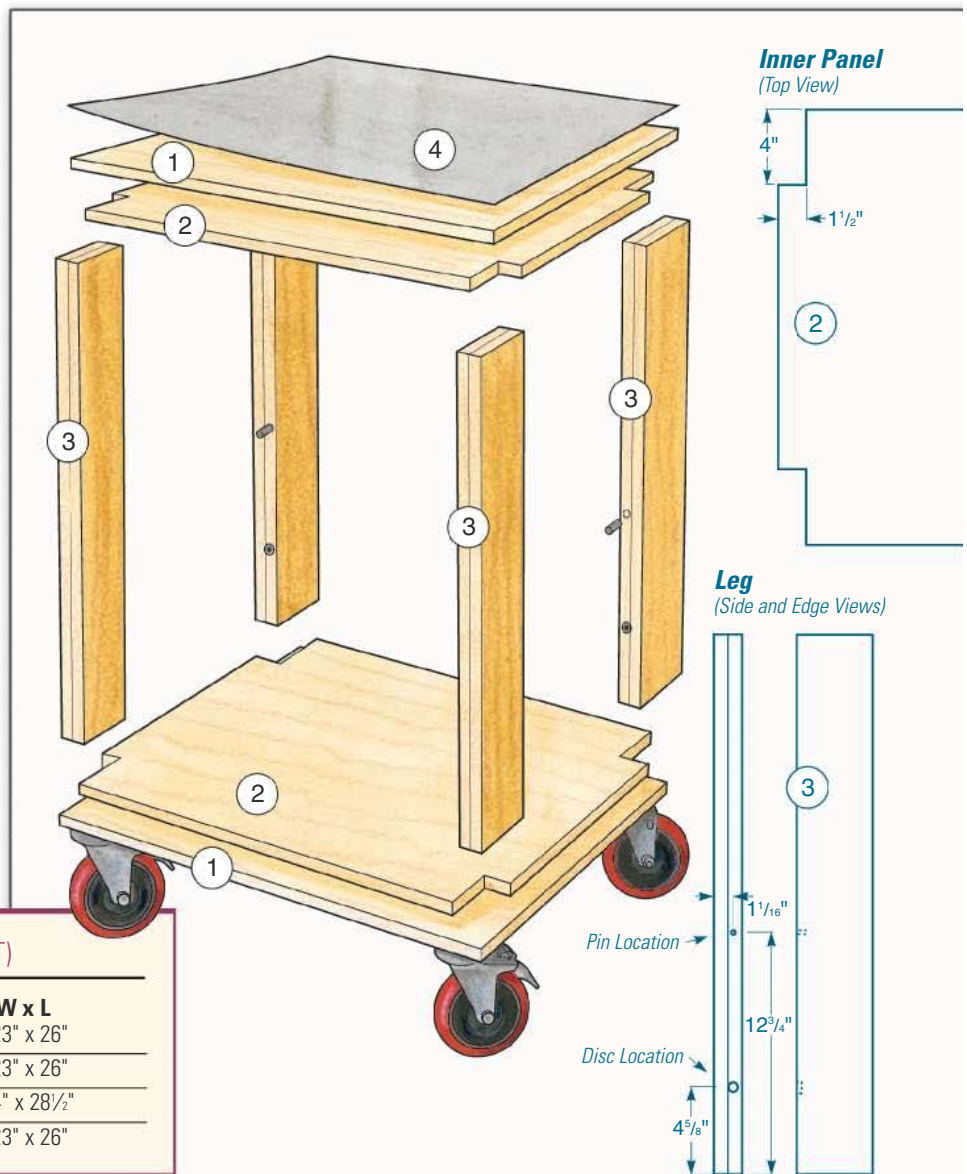
### Designed with Solid Construction

We chose to make the cart from Baltic birch plywood. The vast majority is 3/4" thick, with the drawer boxes and bottoms formed from 1/2" material. You could use any plywood, or even solid lumber for your cart, but voidless composition of the Baltic birch was a big plus in my mind. Just sand the edges smooth and you’ve got a good-looking and durable surface to finish. No need to face the edges. It also glues up great and handles screws (for drawer slides and other hardware) well.

I made the leg components, inner panels and the top and bottom first (pieces 1 to 4). The legs and the top/bottom are just cut from the Baltic birch stock. Glue and clamp the leg

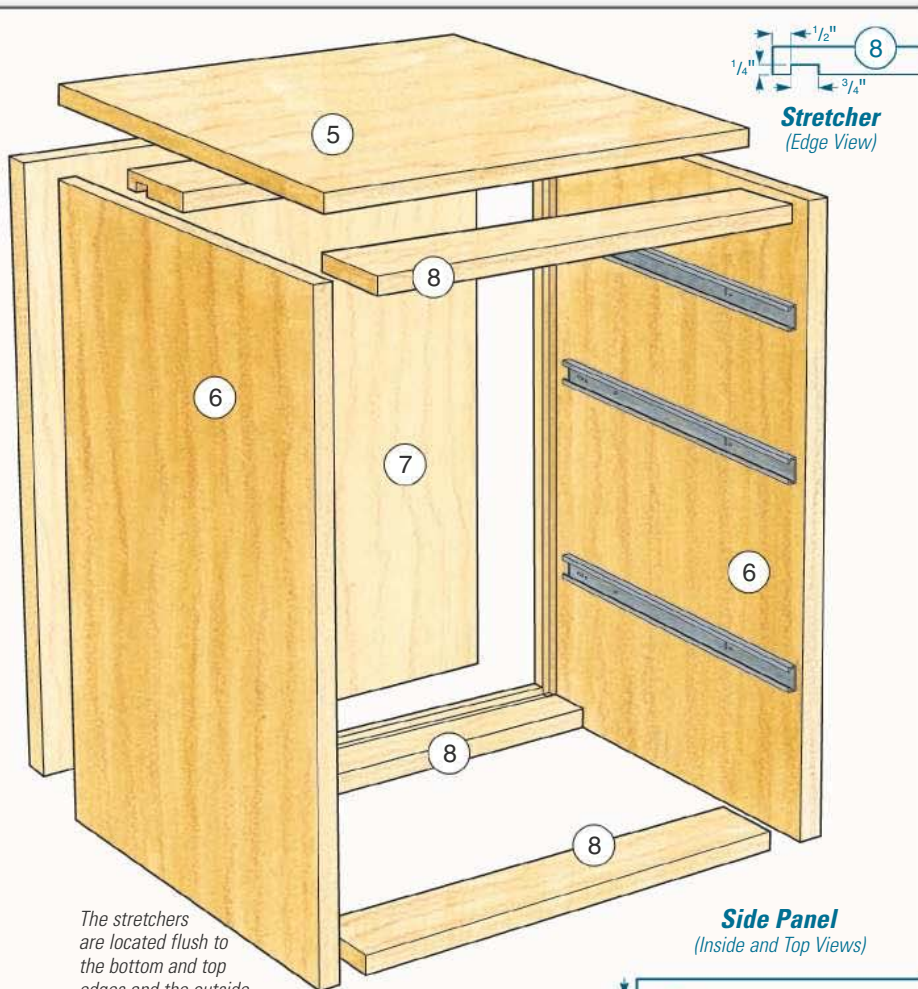


After roughing out the notches on the inner panels, the author pattern-routed the final shape with a 1/2"-diameter pattern routing bit. Its radius perfectly matched the 1/4" roundover bit used on the legs.



### MATERIAL LIST (ROLLING CART)

	T x W x L
1 Top/Bottom (2)	3/4" x 23" x 26"
2 Inner Panels (2)	3/4" x 23" x 26"
3 Leg Components (8)	3/4" x 4" x 28 1/2"
4 Aluminum Top (1)	1/8" x 23" x 26"



The stretchers are located flush to the bottom and top edges and the outside corners of the sides.

### MATERIAL LIST (DRAWER CASE)

	T x W x L
5 Top (1)	3/4" x 18" x 15 5/8"
6 Sides (2)	3/4" x 17 1/4" x 23 1/4"
7 Back (1)	3/4" x 15" x 23 1/4"
8 Stretchers (4)	3/4" x 4" x 14 1/2"

components together to build up the legs. While that glue is curing, move on to the inner panels — which have notches to accept the legs at each corner. I roughed out the notches using a band saw, but then I used a simple hardboard template to pattern-route the exact dimensions (see *Drawings*). One neat trick here is that I used a 1/2"-diameter pattern routing bit. It left the perfect radius in the notched corner to match my legs — because I then used a 1/4" roundover bit mounted in my router table to soften the long edges of the legs.

When those tasks were in the rearview mirror, I glued the inner panels to the top/bottoms in order to form two 1 1/2"-thick pieces. I waited for that glue to cure and then joined the legs to the top/bottom subassemblies with glue and screws. I clamped up the whole unit as well, checking and adjusting for square.

### Making the Drawer Case

The drawer case is as simple a bit of bread-and-butter woodworking as you are likely to find. The sides, back, top and stretchers (pieces 5 through 8) are just cut

*You almost never hear someone say “Dang, I just can’t wait to get out into the shop to slap a new bevel on that roughing gouge!”*

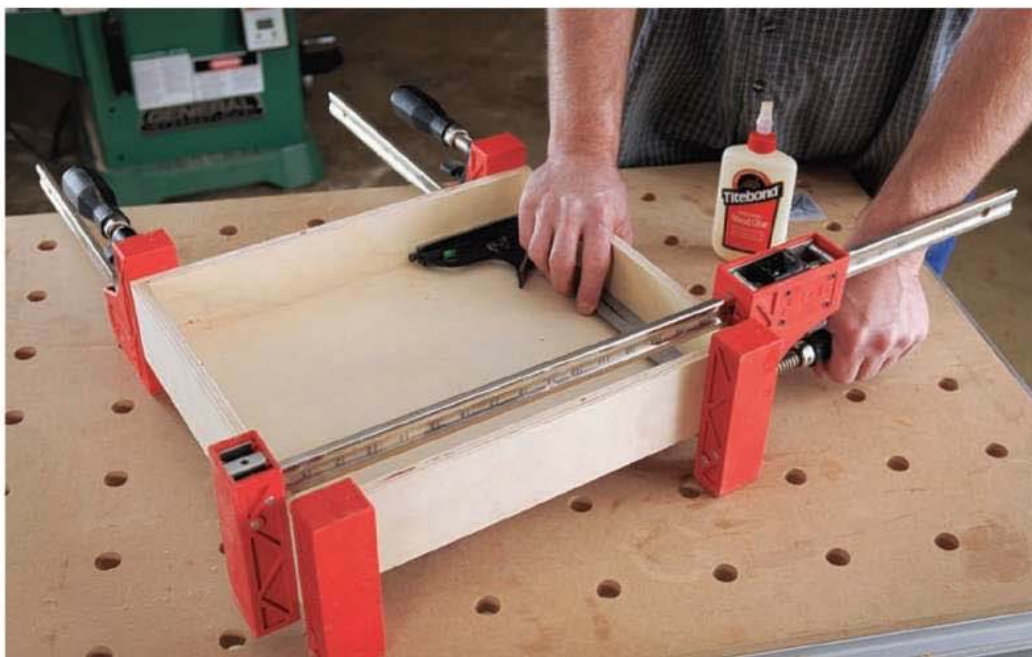
from the plywood to the sizes indicated in the *Material List*. Plow a couple of 3/4"-wide by 1/4"-deep dados into the back edges of the sides to capture the back. Look to the *Drawings* for their locations. Here I must confess that I used a Festool Domino joining system to locate floating tenons to join the stretchers to the sides. Why? Because I have a Domino machine, and my cart was going to get photographed for a magazine. If those things were not true, I would have simply glued and screwed the entire case together. Either method works, and the dimensions of the parts remain the same either way. (See the *Drawings* for the stretcher locations.)

Once you have the sides, back and stretchers assembled, the top is secured to that subassembly using glue and screws driven up through the stretchers. Simply made but sturdy — it could hold an NFL lineman and his coaches. Take a few minutes to sand the drawer case smooth and then mount it to the rolling cart subassembly using screws driven down through the stretchers. You are really making progress now.

### Adding Three Strong Drawers

The drawer boxes (pieces 9 through 18), as mentioned earlier, are constructed from 1/2"-thick Baltic birch plywood, but the drawer fronts are made of 3/4" material. Cut the box parts to size and then step to your table saw and replace the saw blade with a dado set installed to cut a 1/2" groove. Lock the fence 3/8" away from the blade, and test the setup to be certain that the plywood fits properly in the groove you are plowing. Go ahead and plow grooves for the drawer bottoms in all four pieces of

**Glue and clamp the drawer box pieces together. Made of plywood, the bottoms can be captured without wood movement concerns. They're constructed from 1/2" Baltic birch plywood and mounted with full-extension drawer guides strong enough to hold all of your sharpening supplies.**



each drawer box. Next, with the same dado head in the saw, use your miter gauge with an auxiliary fence and stop to form the rabbets at the ends of the drawer sides. Test-fit your drawer boxes, and when you are satisfied, glue and clamp the pieces together. Because these parts are all made of rock-steady plywood, you need not make accommodations for seasonal wood movement.

I made my three drawer fronts from a single piece of Baltic birch plywood so that the wood grain would flow through all three drawer fronts. Hey, just because this is a shop project doesn't mean that we should get sloppy here! Use a 1" core box bit to form the handle cutouts on the drawer fronts. You could mount regular drawer pulls here; it is really a matter of personal preference.

I attached the drawer fronts to the drawer boxes after I used full-extension drawer slides to mount the drawers into the drawer case. That way, if I was a hair off in my drawer location north or south, I could adjust the drawer faces to accommodate for that miscue. (Not that such a thing would happen to me ...)

### Making Tricky Tool Holders

Even though they are just a small part of this pretty substantial project, the tool holders (pieces 19 to 22) took the most thought and design work. They are easy to make: after you cut the pieces to size, both plywood and PVC, take the plywood pieces over to your drill press. Lay out and drill the holes in the top and bottom

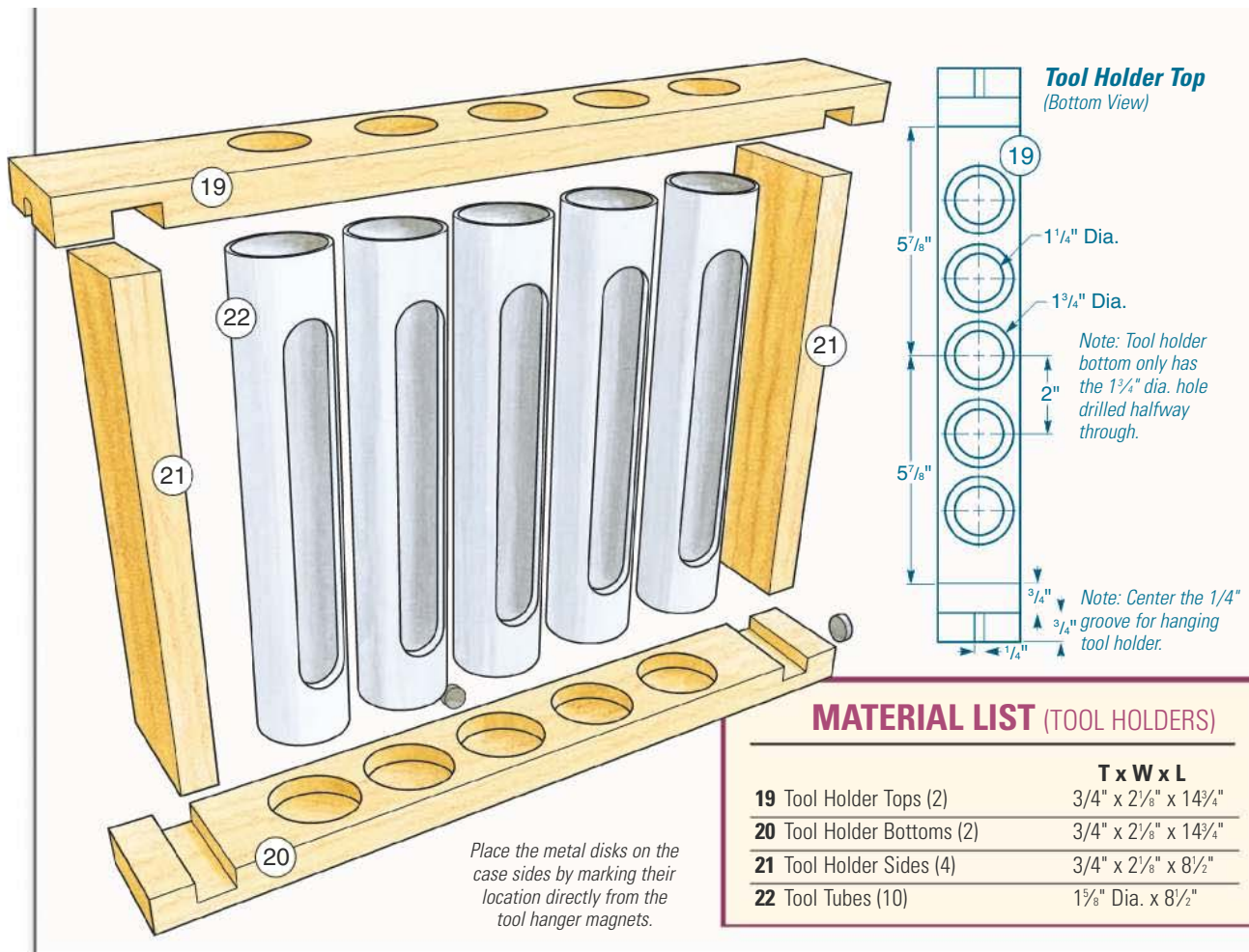
**Drawer Handle Cutouts**  
(Front View)

**Drawer Sides**  
(Top and Inside Views)

**Drawer Joinery**  
Ease the drawer face edges with a 1/2" dia. roundover bit.

**MATERIAL LIST (DRAWERS)**

	T x W x L
<b>9</b> Top Drawer Face (1)	3/4" x 4 1/2" x 15 5/8"
<b>10</b> Top Drawer Front/Back (2)	1/2" x 3 1/4" x 13"
<b>11</b> Top Drawer Sides (2)	1/2" x 3 1/4" x 16"
<b>12</b> Middle Drawer Face (1)	3/4" x 7 3/4" x 15 5/8"
<b>13</b> Middle Drawer Front/Back (2)	1/2" x 7 3/4" x 13"
<b>14</b> Middle Drawer Sides (2)	1/2" x 7 3/4" x 16"
<b>15</b> Bottom Drawer Face (1)	3/4" x 10 1/4" x 15 5/8"
<b>16</b> Bottom Drawer Front/Back (2)	1/2" x 10 1/4" x 13"
<b>17</b> Bottom Drawer Sides (2)	1/2" x 10 1/4" x 16"
<b>18</b> Drawer Bottoms (3)	1/2" x 13" x 15 1/2"



pieces. First, drill the shallow borings that will capture the PVC pipe tubes. Then, on the top, switch bits and bore the access holes all the way through the plywood. On those same pieces, plow the dados that will capture the side pieces. You have one more task on these parts: form the little grooves that capture the shelf pins (from which the whole assembly hangs on the rolling cart). I used a 1/4" core box bit to make the little groove, but you could just as easily carve it with a chisel. Finally, drill a hole to hold a rare-earth magnet on one end of the tool holder bottom. This magnet will hold the tool holder upright when the cart is not in use. Epoxy that magnet in place.

The tubes, while simple in concept, are a little tricky to make in practice (mostly because I decided it would be cool to create a "window" in each tube, so you can see your tool without pulling it all the way out of the holder). To rout that opening, I made a jig that controlled the process. Take a look at the *Drawing* (opposite page) for details on constructing the jig. I used a 1" bowl-carving bit in my plunge router. I attached a round 1/4"

MDF piece to the base plate of my router and then glued the sliding top of the jig right to my router. It worked really slick. I clamped the PVC pipe in place and routed the opening in a single operation. The



**Drilling the two-step borings in the top pieces of the tool holders is most easily completed on a drill press. It can be done with a handheld drill, but it's just a bit trickier.**

length of the sliding top of the jig allows you to register the length of the cut.

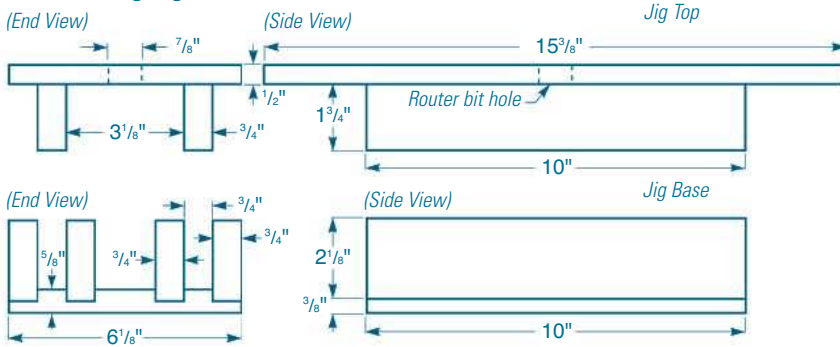
Once all the tubes are machined, you are ready to assemble the tool hangers. Secure the PVC in place using clear silicone adhesive and glue and clamp the hangers together, checking to make sure they're square.

### Completing the Final Details

The sharpening cart is nearly finished at this point; there are just a few fun details yet to be completed. First, locate (from the *Drawings*) and drill the holes to hold the shelf pins on the legs of the rolling cart. After you have done that, mount the casters on the bottom of the rolling cart. I used short lag screws with washers to hold the casters in place. I put the two locking casters on the front side of the cart.

Now hang the tool holders in place. Mark on the leg the location for the metal disk that will align with the rare-earth magnets you installed earlier. Once the hole is drilled, mount the metal disks. At this point, go ahead and mount a rare-earth magnet on the long side of the tool holder bottom and a matching disk on the

## Tube Routing Jig Elevations



This jig controls the “window” cut on the PVC tubes. Clamp the pipe in place (photo at right). With the router secured to the jig top, align one end of the top to one end of the base. Plunge the bit into the pipe and push the router until the other end of the top aligns with the other end of the base — stop the cut and raise the router.



The metal disk shown at left aligns with a rare-earth magnet epoxied into the bottom end of the tool holder (hidden from view). This keeps the tool holder upright when you roll the cart around the shop. The author uses the jig at right to rout the little windows in the PVC tubes.

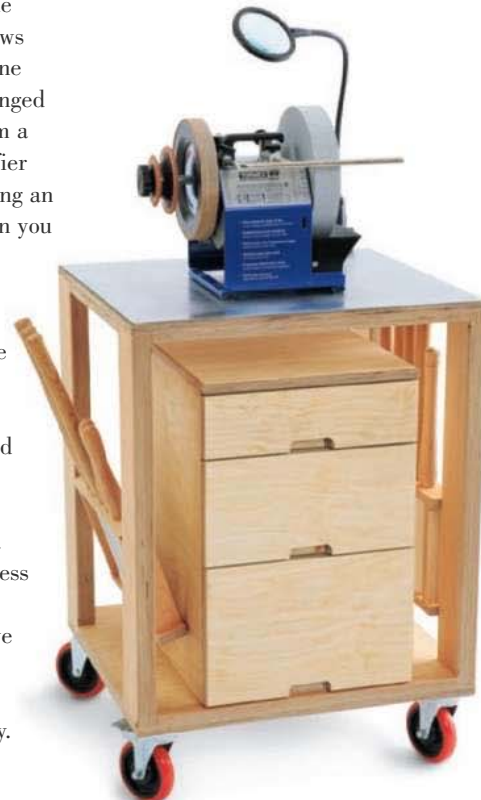


Then lay a few 1/4" dowels across the width of the top to help control the process of sticking the aluminum down. Position the glued faces toward each other, and start pulling out the dowels and sticking the two parts together. Be careful: once they touch, you are not getting them apart. Roll the aluminum down with a J-roller and then trim off the excess with a carbide 45° trim bit in your handheld

side of the drawer case. They will hold the tool holder at an angle when the rolling cart is in use. (See photo, bottom center.)

I also mounted a power strip to the back of the drawer case. That allows me to plug in my sharpening machine and magnifying glass — which is ringed with LED lights. While it may seem a bit over-the-top, that lighted magnifier makes a huge difference when putting an edge on a tool. (It's really great when you can see what you are doing.)

Because I use various sharpening systems, everything from a machine to a slip stone, I wanted the top of the rolling cart to be bulletproof. So I purchased a 1/16"-thick sheet of aluminum (from Lowe's®) and secured it to the top of the cart with contact cement. Cut the aluminum a bit oversized using your table saw and a carbide-toothed saw blade. The process of securing it is just like applying plastic laminate — which would have worked well here. Apply the contact cement to the aluminum and the plywood top. Allow the cement to dry.



router. It will cut the aluminum like butter. Once it was in place, I used some steel wool to texture the top — I have to say, it looked pretty good when I was done.

Now apply three coats of Watco Oil natural finish, let it cure, and you are ready to load the cart up with all of your finishing paraphernalia and roll it to wherever you wish to use it. In my shop, it will be hanging out near the lathe.

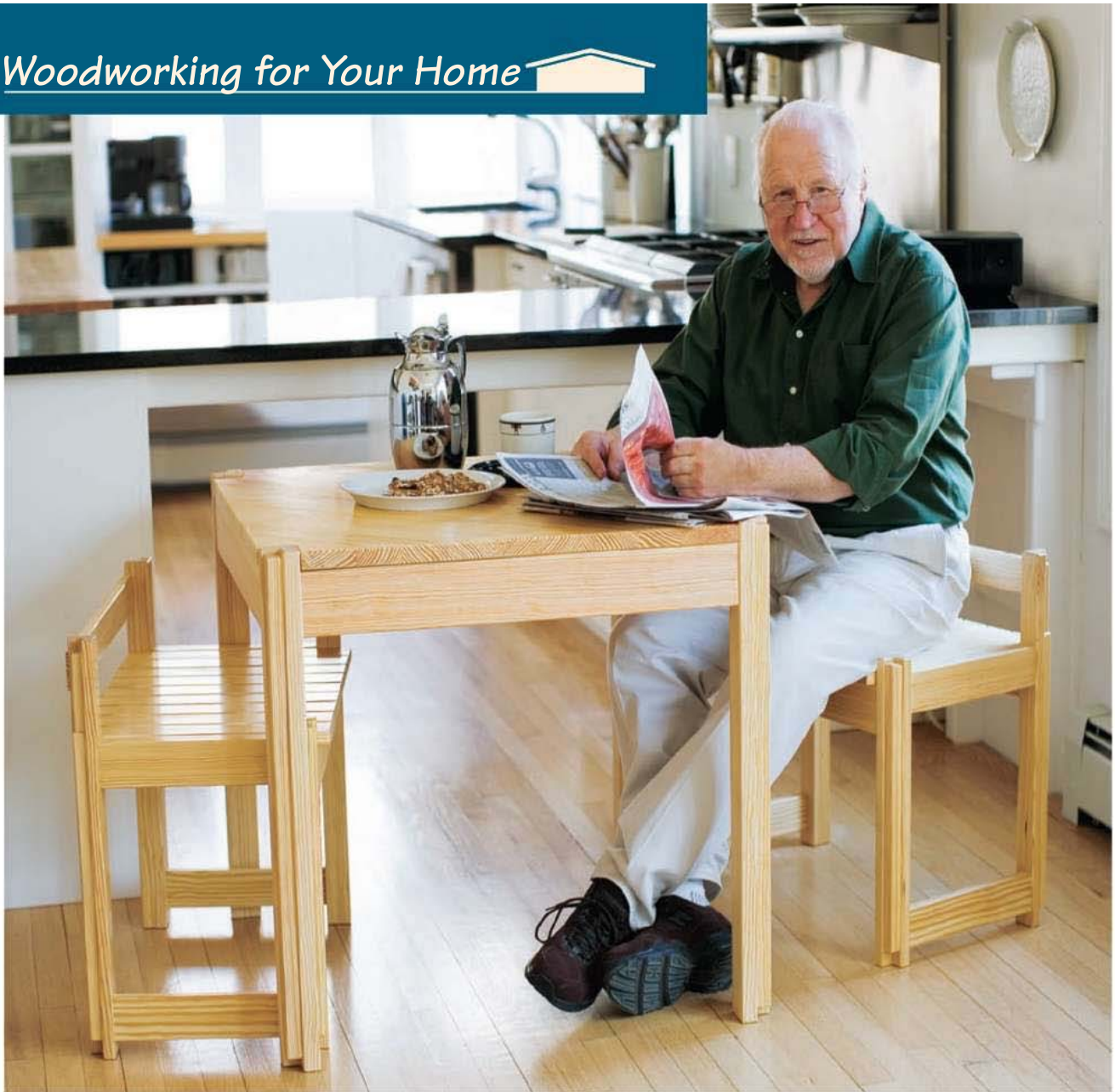
Frank Grant is a professional woodworker and a frequent contributor to *Woodworker's Journal*. When he's not making sawdust, you can find him coaching his son's hockey team.

## Sharpening Cart Hardware

The following supplies are available from *Woodworker's Journal*.

5" Caster (locking) #37138	.....	\$39.99 pr
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## Table and Seats for a Tight Space

By Ian Kirby

*Everyone needs a place to eat and drink.  
But what if your space is limited?*

A project design without a problem to solve is not much more than an impressionistic doodle in wood. You may get an interesting piece of furniture out of the effort, but where do you put it and how is it to be used? The problem to be solved in this case was to create a table and seating that would be used in a limited space, such as a kitchen or an urban loft. To that original constraint, editor in chief Rob Johnstone added that he thought the seating should be contained within the footprint of the table when not in use.

The resulting pieces, made from riftsawn longleaf pine (a subset of Southern yellow pine), offer a practical project which, because of its proportions, line and material, expresses strong graphic impressions.





Depending on your circumstances, you may or may not be a candidate to build this little project, but read on ... because in one of your future projects, you may just make use of the construction methods as a solution to your design problem.

The design and making of these pieces has two things to teach a reader: making “angle-shaped” legs from flat stock, which is necessary for the screwed-together assembly; also, making the jigs required to hold the bench parts accurately and firmly in place while joining them.

### Material Thickness

Each component of the table is made of 1"-thick wood, and benches are from 3/4"-thick material. The straight grain pattern on all four faces of the stock is the result of being riftsawn. The simple lines show off the color difference between the early and late wood to great advantage. To hide dings, as well as to be kinder to body parts that may collide with the furniture in cramped spaces, all the exposed edges are softened with a 1/8" radius. The polish (“finish” on this side of the pond) on the table and benches is a combination of salad bowl oil and beeswax, suitable to protect the surface from any epicurean splatters that may occur. This pine, sustainable and plantation grown, finishes very smooth and straight from a plane and takes a finish well. Its lighthearted look seems to epitomize the look of “wood.”

### Built-up Legs

The leg and rail subassemblies are the structure upon which the tabletop and the bench seat slats sit. Key to that subassembly are the L-shaped built-up legs. The methodology for constructing the legs is as follows.

- Select the stock for the legs and identify the face of the material that you wish to be on the outside. Mark this face with a “V.”
- Plane smooth the face of the wood opposite from the “V.”
- Next, square the edge of the board (the edge closest to the point of the “V”). My preference is to use a plane for this task.
- Stepping over to the table saw, cut the stock in two. Guide the cut with the accurate edge to the fence.
- Now glue the two pieces into an “L” shape. Roll glue evenly onto the planed edge at the point of the “V” and clamp the pieces securely. Allow the glue to cure.
- Remove the stock from the clamps and plane the outside faces square one to the other.
- Moving back to the table saw, set the fence to the proper width of cut and slice both edges of the legs of the L-shaped piece to the proper dimension.
- Plane the sawn edges square.
- Check your table saw miter gauge for square to your saw blade and then square up one end of the leg.



*The angle-shaped corner block (above) serves two purposes. It adds a great deal of resistance to stress on the joints, and screws driven through its oversized holes hold the top in place.*

*The radiused edges, shadows between the pieces and various setbacks of the parts create strong visual interest (right and top photos).*



## Beginning the Built-up Legs



Once you have cleaned up the inside face and squared one edge, cut the piece in two with the square edge against the fence (left photo). When gluing pieces together like this, reduce the tendency for the pieces to slide around by rolling a thin layer of glue on the edge, rubbing the parts together, and then holding the clamp head flat against the parts before you begin to tighten (center photo). Once the glue is cured, plane both outside faces square. Check the relationship of the planed faces (photo at right).



- Set the saw's fence to the proper length of the leg. If your fence does not move fore and aft as mine does, clamp a set-off block to the fence to keep your stock from being trapped between the fence and blade as you cut. This cut squares the second end and cuts the leg to length at the same time.
- Radius all the ends and edges.
- Drill the clearance holes and countersinks in the relevant places. See *Drawings* for details.
- Polish the leg, omitting the inside angle where the cover strip will be glued.

There you have it — a leg that is ready for the next step in the building process.

### Screw-driven Joinery

All of the joints on the table and benches are achieved with screws. To do this, jigs are required to hold the leg and rail components in their proper position as the screws are being driven home. There is one more important point — although it seems almost too basic to mention — there must be holes bored for the screws to work as they should. Read the sidebar (below) for more details on how to properly prepare for this task. Taking these steps will ensure that the joints close tightly. While the location of the various screw holes must be sufficiently accurate to hold the pieces together, they are hidden from view, so don't fret over

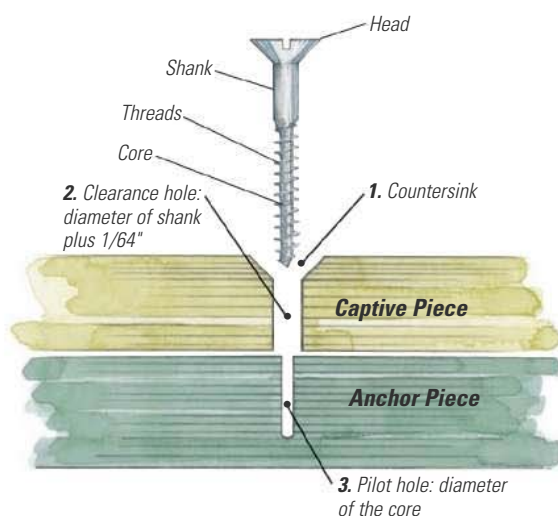
exact placement. Look to the *Drawings* for more details.

### Joining the Bench Parts

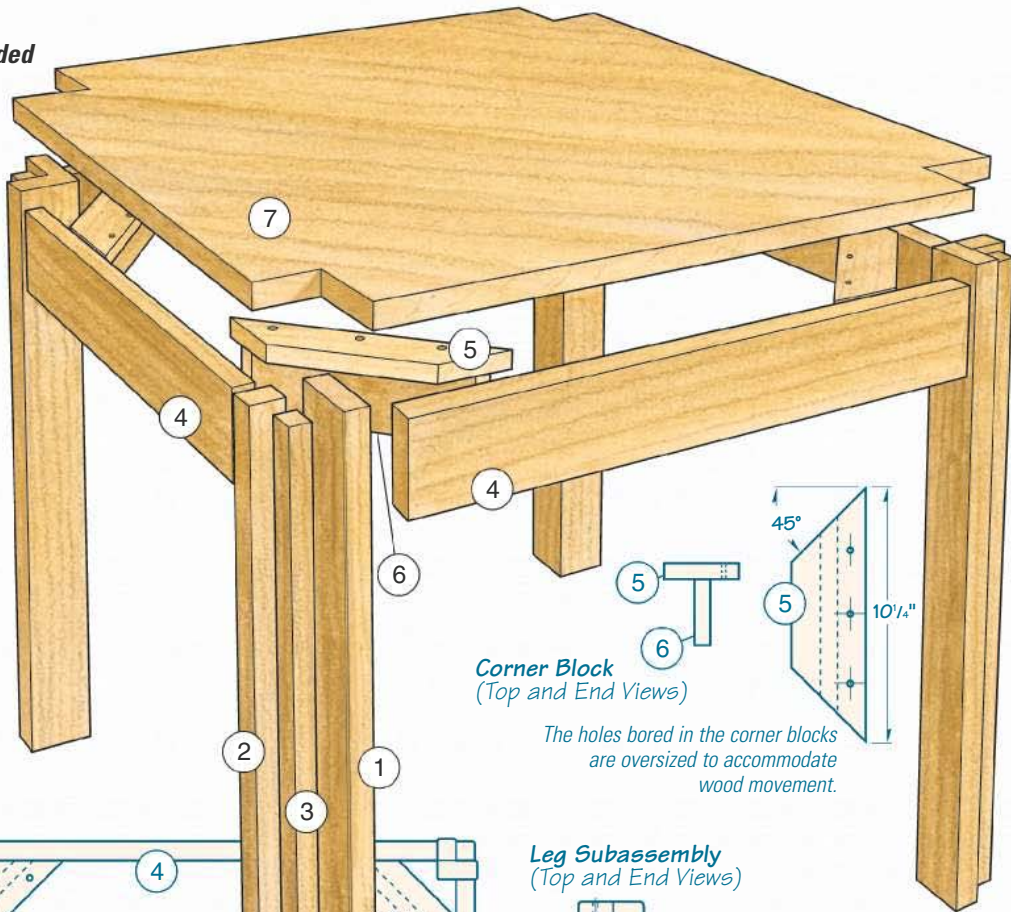
Two benches provide the seating for this set. The subassembly and final assembly of the structural parts is novel in its finality, both figuratively and practically. At this stage, each piece has been shaped and polished. There are simply too many pieces to align, control and assemble freehand. The solution is a jig — actually, two jigs. One is used to make the subassembly of a front leg, a back leg and their two rails, which form the end frames. The other is needed to join these frames to the long rails. As is often the

## Three Steps to Proper Screw Joints

When you join wood together using screws — especially hardwood or this longleaf pine — there is a temptation to skip the drilling steps and to attempt to secure one piece of wood to another as if it were sheetrock on a stud wall. This is bad technique and a recipe for disaster. Screws are a robust means to join wood, but to be most effective you must properly prepare the joint. The captive piece of wood should have a countersink formed to accept the head of the screw and a clearance hole bored that is just slightly larger than the diameter of the shank of the screw. The anchor piece needs a pilot hole which accommodates the core of the screw and allows the threaded section of the screw to cut into the wood tissue without displacing so much material as to cause splitting.



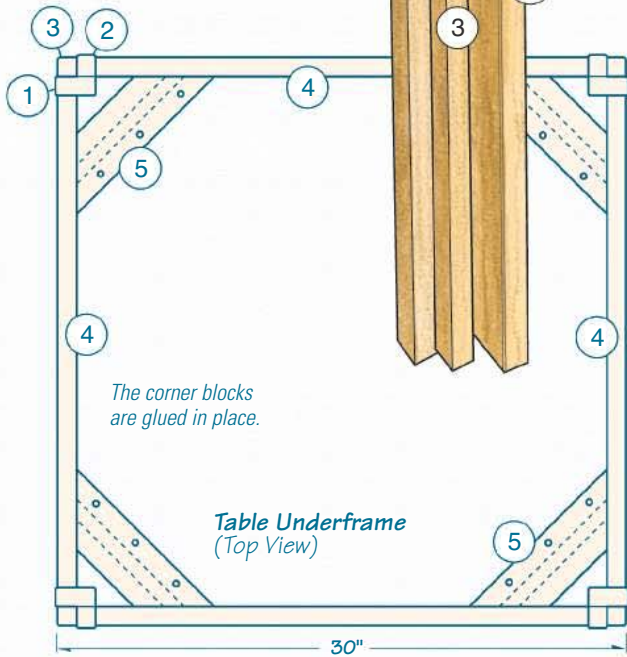
**Table Exploded View**



**Corner Block**  
(Top and End Views)

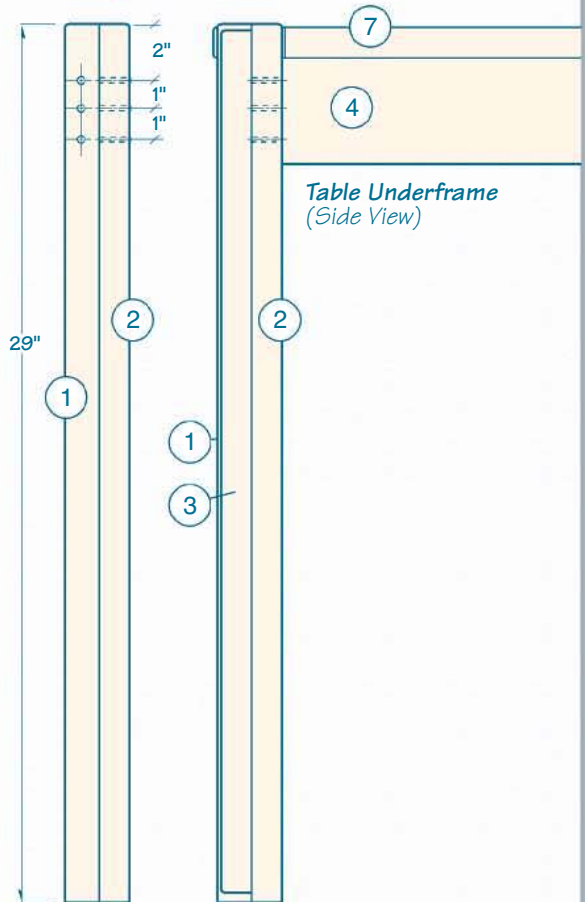
The holes bored in the corner blocks are oversized to accommodate wood movement.

**Leg Subassembly**  
(Top and End Views)



The corner blocks are glued in place.

**Table Underframe**  
(Top View)

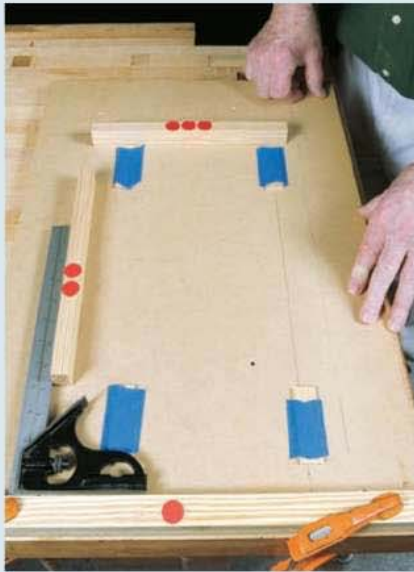


**Table Underframe**  
(Side View)

**MATERIAL LIST (TABLE)**

	<b>T x W x L</b>
<b>1</b> Wide Leg Pieces (4)	1" x 2 1/8" x 29"
<b>2</b> Narrow Leg Pieces (4)	1" x 1 1/8" x 29"
<b>3</b> Leg Inserts (4)	1" x 1" x 28 1/2"
<b>4</b> Rails (4)	1" x 3 1/2" x 26"
<b>5</b> Horizontal Corner Blocks (4)	1" x 2 1/2" x 10 1/4"
<b>6</b> Vertical Corner Blocks (4)	1" x 2" x 8"
<b>7</b> Top (1)	1" x 30 3/4" x 30 3/4"

## Jigs Support the Bench Assembly



*A jig is required to locate and control the bench parts during assembly. After the pieces are clamped in place, pilot holes are drilled and the beeswax coated screws are driven home.*

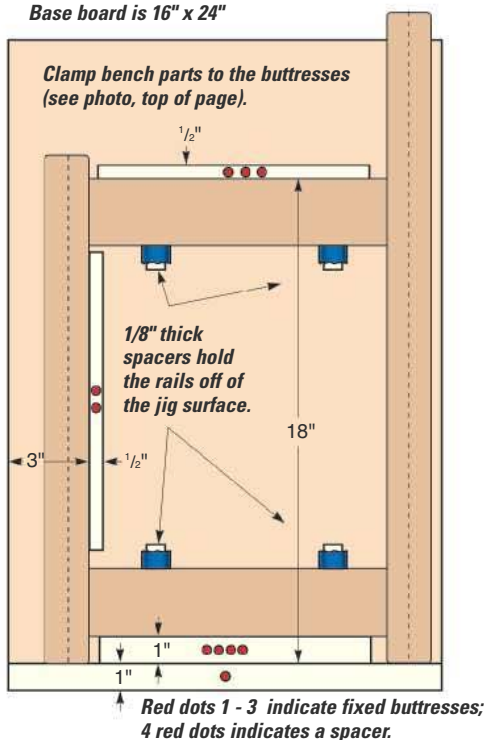


case with joinery, its elemental nature exacerbates tiny errors in alignment. The jigs required for these components are not difficult to make, but they will be the difference between a well-made bench and something that is inaccurate and a frustration to assemble. Look to the *Drawings* below for the construction details to fabricate these jigs.

The idea is simple. You need a base made from 3/4" sheetstock that is larger than the subassembly. Screwed and glued to the base are buttresses onto which the legs and rails are positioned and clamped.

### Side Frame Jig

*Base board is 16" x 24"*



Once the parts are clamped in place, complete the predrilling process by boring the pilot holes. Next, you drive home the screws. See the *Drawings* for the jig construction details. Note that there are four 1/8"-thick spacers that lift the rails off of the surface of the base. This accommodates the radius formed onto the edges of the legs. The second jig (photo, below right) positions the long seat rails to the leg frame subassembly.

### Building the Table

There would be no problem with constructing and using a jig to aid in this construction process — but it is not as necessary as with the benches. Although the legs and rails that make up the table's lower components are similar to those of the benches, they are made of 1" stock. Because the table has three parts to align during subassembly, it can be constructed simply by clamping the parts together and tapping them into proper alignment with careful use of a hammer. Use a dummy rail positioned as if it were a bottom rail. This allows you to clamp together the subassembly and make the fine alignments and adjustments necessary. When all the parts are properly in place, pilot holes are bored and the screws are driven home. Screw the rail and leg subassemblies together to form opposing end frames. Then join these end frames together with the front and back rails.

### Tabletop

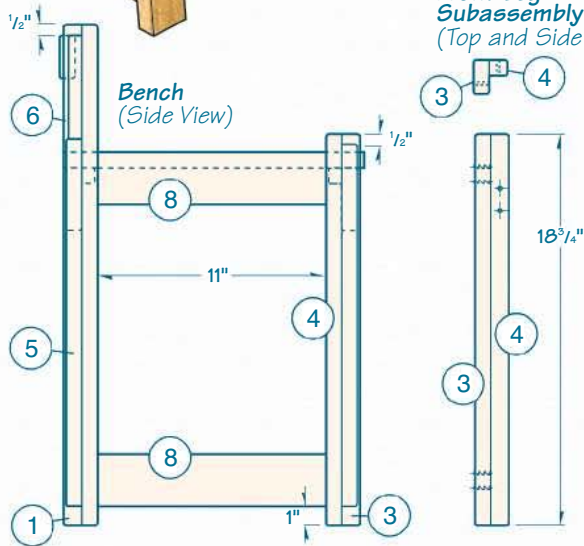
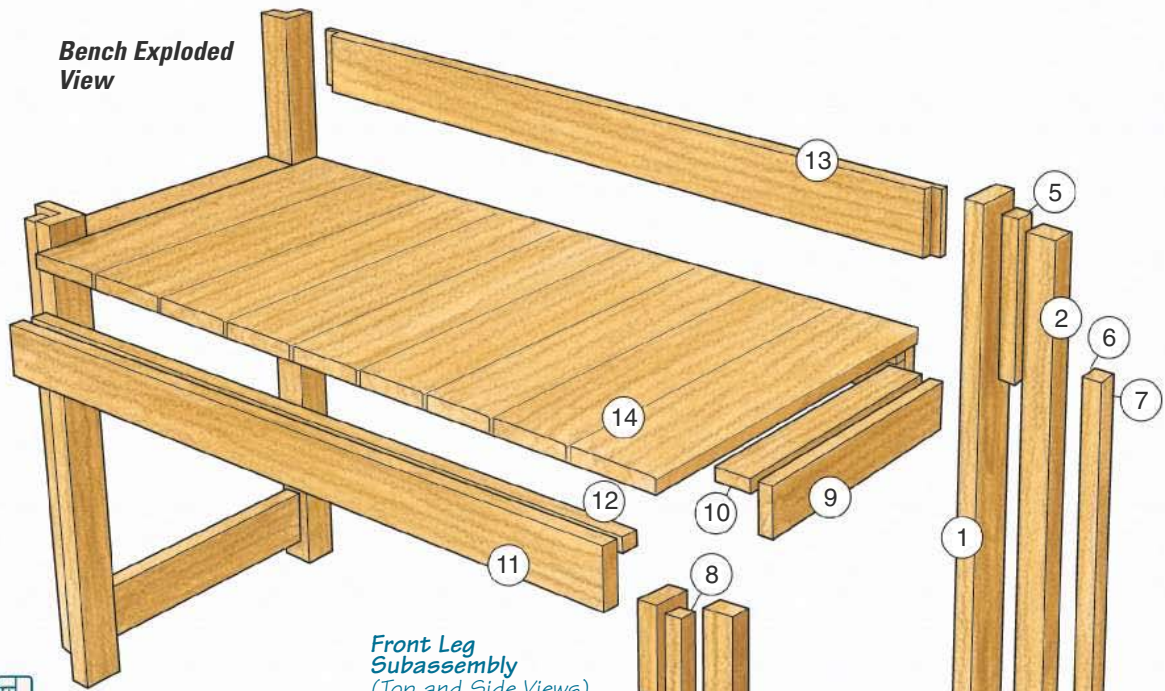
As with any square tabletop, my preference is to arrange the grain on the diagonal. This I find a more visually cohesive feel to the geometry than the "left to right" grain direction. As well, with this approach, all four edges present a similar end-grain pattern.

The center board in this glued-up tabletop is particularly wide with a centered cathedral figure going out to a straight-grained pattern on its edges. The remaining pieces making up the top are riftsawn — all are butt jointed together and held with yellow glue. After being cut to size, the top and bottom surfaces were planed flat and the corners were notched out to fit around the legs with a 1/16" gap. All the edges were radiused and the whole was finished with my beeswax and salad bowl oil combination. The top is made to project 3/8" beyond

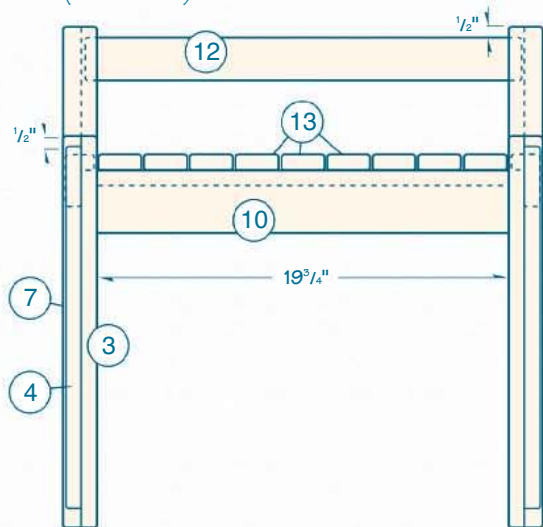


*The second jig has buttresses positioned to hold the end frames and the top rail. To prevent the frames from falling over during clamping, a brace with retaining blocks is placed across the top of the subassembly.*

**Bench Exploded View**



**Bench (Front View)**



**MATERIAL LIST (BENCHES)**

	<b>T x W x L</b>
1 Wide Back Leg Pieces (4)	3/4" x 1 5/8" x 24"
2 Narrow Back Leg Pieces (4)	3/4" x 7/8" x 24"
3 Wide Front Leg Pieces (4)	3/4" x 1 5/8" x 18 3/4"
4 Narrow Front Leg Pieces (4)	3/4" x 7/8" x 18 3/4"
5 Back Leg Lower Inserts (4)	3/4" x 3/4" x 17 5/8"
6 Back Leg Upper Inserts (4)	1/2" x 1/2" x 5"
7 Front Leg Inserts (4)	3/4" x 3/4" x 17 1/4"
8 Top and Bottom Side Rails (8)	3/4" x 2 1/2" x 11"
9 Seat Infill (4)	5/8" x 3/4" x 11"
10 Front/Back Rails (4)	3/4" x 2 1/2" x 19 3/4"
11 Front/Back Rail Cleats (4)	5/8" x 3/4" x 19 3/4"
12 Bench Backs (2)	3/4" x 2 1/16" x 21"
13 Bench Slats (18)	3/4" x 2 1/16" x 15"

## Adding the Leg Inserts and Slats



Modified cut-offs from the bench and table legs were used as clamping blocks to aid the process of gluing and clamping the leg inserts securely. The tape holds them in place to aid clamping.

The bench parts (the slats are shown here) were all brushed with a coat of salad bowl oil. The oil was allowed to dry completely, then a coat of beeswax was applied.



The seat slats are attached from below through a cleat. Come from each end to the middle, using a spacer to keep the gap between slats equal.

the face of the top rails, making enough of a shadow line to be in keeping with the other radiused edges and the gap shadows.

Because the grain of the top is on the diagonal, it wouldn't be prudent to attach it in the normal way, with buttons, because the shrinkage and expansion is at right angles to the grain. The gap between the leg and the top is sufficient to camouflage the small dimensional changes which may occur. Instead, the top is held to the underframe by screwing through the angled corner blocks. Oversized clearance holes accommodate wood movement. In this way, corner blocks are sort of a two-for-one solution because, cut and attached accurately, they help any corner joint resist stress in addition to securing the tabletop.

### Leg Accents

The legs on the table and benches have square moldings glued to the inside angle. All the show edges of this piece are radiused. The moldings, which fill out the legs, create rabbets, adding highlights and shadows. They also hide the screws. Clamping blocks for the moldings (photo, above left) are made from leg cut-offs. Using a wide chisel, it is easy to split off the corners at 45° which proved a clamping face.

### Final Details

It always seems that tasks stretch out as you get to the end of a project. One main advantage of the methodology directed here is that the finish is already applied. In this case, when the last screw is driven, you are done with the piece. Ready to put the table and benches in place and begin to enjoy an epicurean delight — with or without splatters.



*Ian Kirby is a master woodworker and a regular contributor to Woodworker's Journal. He is the author of The Complete Dovetail from Linden Press and many other books.*

“To that original constraint, editor in chief Rob Johnstone added that he thought the seating should be contained within the footprint of the table when not in use.”





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# Tool Review

## Cabinet Saw (R)Evolution

By Chris Marshall

*Better safety features, improved dust collection and other creature comforts make today's new cabinet saws a cut above previous models.*

It's been seven years since we last reviewed 10" cabinet saws, so when editor in chief Rob Johnstone suggested we put them under the microscope again, I jumped at the chance. That's because so many good changes have taken place in this saw category since then: new Underwriters Laboratories (UL) requirements for riving knife guard systems (see page 51), SawStop's remarkable blade brake that's keeping fingers where they belong and lots of other features that will make sawing more convenient and enjoyable. So, it's high time for us to bring you up to speed on some of the latest and greatest models. Generally speaking, these shop mainstays have never been better.

### Choosing the Test Group

I've been using various 3hp cabinet saws for years in my shop, and that motor size has been sufficient for any ripping or dadoing operation that has come my way. For that reason, I requested 3hp models from all the participating companies. Additionally, I've found 50" or 52" fence systems to be quite useful for ripping wide sheet goods down to size, and their long extension tables double as a handy extra worktable or stationary router table. So, I asked for long fence systems, too (most saws are also available with shorter 36" rails if your budget or space prohibits the biggies). Aside from these two stipulations, I let the manufacturers select the specific model for me to test, which explains the broad price spread of \$1,299 to \$3,299. Still, this

group of 10 represents a good cross-section of the market. Incidentally, we invited Steel City Tool Works to participate, but they didn't provide a saw in time for testing.

I ran these saws through a variety of cutting tests on thick hardwood (see page 58), then looked closely at their individual features. Without further ado, here's my evaluation of each machine.

### Craftsman 22805

Craftsman's 22805 Left-Tilting Arbor Saw is a fitting machine to begin this review, because it represents a good example of a basic cabinet saw. Some of its features aren't cutting-edge, but it's still a respectable option for a budget-driven woodworker. The saw has one of the smaller cast-iron tops of the test group, but the extension table and rails provide 50" of ripping capacity to the right. I appreciated the cast-iron throatplates included with this saw — one for standard blades and another for dadoing. They're flat, heavy and fit precisely into the

*Tool Review continues on page 50 ...*



*Our field editor's shop has been stuffed wall-to-wall with cabinet saws for the past few months of testing, in order to share the latest developments with you.*



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# Tool Review continued



## Craftsman 22805

Rip Capacity: 50"R, 10"L  
 Depth of Cut: 3" (90°), 2½" (45°)  
 Table: 27"W x 37"L  
 Weight: 490 lbs  
 Price: \$1,299  
[www.craftsman.com](http://www.craftsman.com)  
 (800) 349-4358

table throat opening. The arbor design on this machine places the blade flange closer to the left edge of the table opening than other saws, so you have lots of room to reach down inside for blade changes. That's a subtle but appreciated convenience.

One unusual detail about this saw is that it comes with two interchangeable arbor spindles: a long one for stacking wide dado sets and a shorter one for regular blades. They're not hard to switch, but it's unnecessary to do on other saws.



*Flat aluminum fence facings (right photo) required no shimming on Craftsman's rip fence. The saw comes with two interchangeable arbor spindles (left) — one for standard blades and the other for dado sets.*



cabinet; it's harder to "knee" the kill button quickly. After cutting, I scooped 13 handfuls of debris from inside the cabinet: a pretty good result, but not on par with some competitor machines.

My verdict: the Craftsman is a decent machine for a low price.

Currently, this saw still has a fixed splitter and guard that bolt in place. Craftsman informs me that it will be replaced in early 2010 with a split guard and riving knife to comply with the new UL riving knife standards. That's a welcomed step forward. The riving knife will have high and low position settings to accommodate both through and non-through cuts such as grooves and rabbets. The guard system will install or remove without tools.

Craftsman's saw has a smaller-dimension front fence rail and rip fence spine than other saws, but they were stout enough for heavy ripping. Plus, the fence's aluminum facings were flat — that's important for accuracy.

Despite a somewhat thinner trunnion casting than other saws here, this saw still cut smoothly, with three drive belts spinning the blade. I wish the power switch were mounted to the fence rail like other saws and not to the

## Delta Unisaw

As you're probably already aware, Delta completely redesigned the Unisaw two years ago with many new features. Up top, the saw has a two-piece split guard that offers a clear, open line of sight to the blade and pops off with a flip lever. A single riving knife supports it, and it's simple to shift the knife to high or low positions or

## Delta Unisaw

Rip Capacity: 52"R, 12"L  
 Depth of Cut: 3½" (90°); 2½" (45°)  
 Table: 31"W x 40"L  
 Weight: 661 lbs  
 Price: \$3,299  
[www.deltaportercable.com](http://www.deltaportercable.com)  
 (800) 223-7278



*Delta's split fence guard (top right photo) offers exceptional line of sight to the blade, and front-mounted hand wheels (right) make for easier blade adjustments.*





*You can just about split hairs with the T-square style rip fences on these big saws, making ripping extremely precise (top right photo). A quick-release knob simplifies changeovers on General's riving knife and guard system (right).*

### General 650R-T50

Rip Capacity: 50"R, 12"L  
 Depth of Cut: 3 $\frac{1}{8}$ " (90°), 2 $\frac{3}{16}$ " (45°)  
 Table: 28"W x 36"L  
 Weight: 495 lbs  
 Street Price: \$2,899.99  
[www.general.ca](http://www.general.ca)  
 (514) 326-1161

remove it for dadoing, thanks to a pull lever under the front fence rail. A versatile design.

Other controls are also user-friendly: the two blade tilt and elevation wheels are positioned in front where they're easy to reach, and the dial-style bevel tilt scale is both enclosed and accurate to within one-quarter degree.

Delta's new, beefy one-piece trunnion — the biggest of the test group — and American-made Marathon motor form a solid, low-vibration power

platform. And, the Unisaw has updated dust collection provisions: a shroud below the blade is coupled to a hose that directs dust out the back of the cabinet. Plus, the dust port adapter cover on the bottom has openings on the bottom to catch debris that escapes the shroud. I only removed one handful of dust after my cutting test.

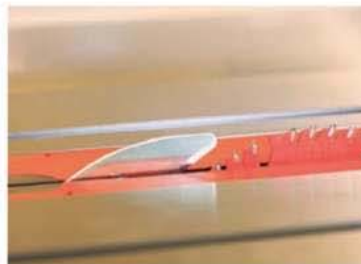
You also get more table area in front of the blade with this machine — 15 $\frac{1}{4}$ " when the blade is raised to 1". It's very helpful for wider crosscutting.

Other tempting features of this saw include a storage drawer with full-extension slides, a precision miter gauge that has nine adjustable detents and a true Biesemeyer

*Tool Review continues on page 52 ...*

## Riving Knives: The New Standard for Table Saw Safety

Kickback is one of the leading causes of table saw injuries. It happens in two ways: when the wood kerf closes up behind the blade during ripping and pinches the blade, or when workpieces pivot into the blade's rear teeth. Either way, the blade lifts and fires them back at the operator with great force. But, thanks to revisions to Underwriters Laboratories UL 987 Standard for Stationary and Fixed Power Tools, all table saws designed after 2008 must now have a riving knife that rises and falls with the blade instead of a fixed-position splitter. Its close and constant proximity to the teeth greatly reduces kickback from happening. UL also stipulates that the guard must attach to a riving knife-style spreader that rises and falls with the blade. And, the system must be easy to install and remove. Either the riving knife or the guard/spreader can be left on the saw for most cutting operations except dadoing.



**To comply with UL 987, manufacturers are taking different approaches. Some provide one riving knife/spreader with removable kickback pawls and guard (top parts in right photo). Others fix the guard and pawls to the spreader as one high-profile unit for making through cuts and offer a second low-profile knife for non-through cuts (bottom).**



# Tool Review continued

*Many good changes have taken place in this saw category since we last reviewed them. Generally speaking, these shop mainstays have never been better.*

rip fence with a fine, easy-to-read cursor.

At \$3,299, a saw should be feature-rich and heavy-duty. While the Unisaw costs a bundle, I still think it delivers admirably on both accounts.

## General 650R-T50

General's Canadian-made 650R-T50 saw has a modest collection of features, and I'm not convinced they stack up to the saw's upper tier pricing. It has the smallest cast table of the test group, but it still offers a generous 14½" in front of the blade when set to 1". The guard system is split-style with aluminum sides that offer good protection but limit visibility, compared with clear guards. You get two riving knives: one fixed to the guard and a second for non-through cuts. A helpful locking pin enables tool-free changeovers.

The T-square rip fence locks positively with a sharp, thin cursor for accurate setups. The front rail has no end caps, oddly, and the miter gauge is a basic cast unit with no miter slot bar adjusters.

Overall, the saw is well finished, but it could use some hooks and hanger brackets on the cabinet for storing push sticks, miter gauge and rip fence. It has a rubber catch for holding the motor door closed that seems to stretch further than it should; I wonder about its long-term durability.

The 650R-T50 did a fine job of cutting during testing, and although the Off button is fairly small, it's easy to reach without fumbling. I pulled out about nine fistfuls of dust — pretty good for the test group. Overall, this saw just isn't a

standout for \$2,900 compared with other comparably priced models in this roundup.

## General International 50-300M1

General also provided me a General International 50-300M1, manufactured in Asia, which I found to be appointed with lots of attractive features. First off, this saw has vac hose port in the guard as well as a shroud underneath the blade for two-point dust collection — a great tag team! After my cutting test, with the top guard connected to a separate shop vacuum, the tabletop was not only cleaner than many other saws, but I could only scrounge a handful of dust from inside.

The guard offers helpful clarity for seeing the blade, and it's mounted to a high-profile riving knife, plus a

second low-position knife comes standard. They switch out with a flip-lever release under the throatplate. Still, unlocking the riving/knife guard is a bit of a hassle: the throatplate can't be removed separately, so you have to lift it with one hand and find the lever underneath to unlock things. Other styles are easier.

You'll need a rolling base for most cabinet saws if you need to move them around the shop, but not on this machine. It has integral casters below a cast-iron skirt that crank up and down with a separate hand wheel. The action takes a lot of cranking, but once engaged, you can turn or roll the saw around with ease.

Unlike its Canadian cousin, this saw has places to hang wrenches, fence and miter gauge, a clip for a push stick and setscrews on the miter

## General International 50-300M1

Rip Capacity: 52"R, 14"L  
Depth of Cut: 3" (90°); 2¾" (45°)  
Table: 29"W x 42"L  
Weight: 492 lbs  
Street Price: \$2,499.99  
[www.general.ca](http://www.general.ca)  
(514) 326-1161



*A push-button arbor lock (top) and integrated casters (left) are only two of the 50-300M1's many attractive features.*

## Grizzly G0691

Rip Capacity: 50"R, 12"L  
Depth of Cut: 3 $\frac{3}{8}$ " (90°), 2 $\frac{3}{16}$ " (45°)  
Table: 27"W x 40"L  
Weight: 590 lbs  
Street Price: \$1,350  
[www.grizzly.com](http://www.grizzly.com)  
(800) 523-4777



Grizzly's hairline fence cursor (left) makes it easier to read rip fence settings without parallax discrepancies. A handy cleanout door around the dust port (inset) simplifies cleanout chores.

gauge bar to snug it up in the table slots. It also has a push-button arbor lock for one-wrench blade changes. There's no standard extension table or legs here, but you can add them as accessories for \$126.

The saw has one feature that wasn't up to snuff: a digital readout for bevel-tilt angles fell out of accuracy consistently after the blade was tipped beyond 17°. But, a nice manual pointer scale came to its rescue anyway.

The 50-300M1 offers a lot to like at a mid-range price, with smart offerings for safety, dust control and convenience.

### Grizzly G0691

Grizzly's G0691 isn't loaded with extra doodads, but for the reasonable price of \$1,350, it should be a good workaday saw for today's thinner wallet.

The saw's mid-sized table provides 14" of real estate in front of the blade when set to cut 3/4" stock — several

inches more than some other competitor saws. A steel-and-plastic split guard, connected to a high riving knife, slides out by engaging a knurled release pin you can access through the throatplate. A second low-position knife slips into place without requiring a wrench.

The rip fence locks down positively and can be adjusted for square in two directions — nice. While I like the fact that the fence's plastic facings will be easy to replace using exposed screws, they weren't flat. I needed to shim them.

The saw's three-piece cast trunnion is thick and helps the motor drive the blade powerfully with three V-belts. Although the saw had no trouble tackling tough rip cuts, dust collection left 16 handfuls behind. But, I like the saw's access door around the port for removing larger scraps. Grizzly also includes a dadoing insert plate, standard.

Chromed hand wheels provided smooth blade travel in all directions. Grizzly could improve the bevel tilt scale here: major reference angles are only labeled every 15°.

*Tool Review continues on page 54 ...*

## JET Xacta Saw Deluxe

Rip Capacity: 50"R, 12"L  
Depth of Cut: 3" (90°), 2 $\frac{1}{8}$ " (45°)  
Table: 29"W x 42"L  
Weight: 407 lbs  
Street Price: \$2,099.99  
[www.wmhtoolgroup.com](http://www.wmhtoolgroup.com)  
(800) 274-6848



JET's spreader-type riving knife has quick-release provisions for the guard and kickback pawls (left). A bottom storage drawer (right) holds lots of accessories.



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# Tool Review continued

*In our strained economy, the "value" tension between price and features has never been greater, so picking a "best" saw is really tough.*

unconventional design that delivers fluid blade movement and a rugged arbor platform.

Laguna provides a split guard fixed to a riving knife. It locks in place with a bolt; a quick-release mechanism would make switchouts a bit faster and easier here.

The fence system, bevel tilt scale and pointer on this saw resemble the components on Grizzly's G0691, with the same mixed bag of issues for me. The saw also has a handy cabinet cleanout door.

Cutting performance was good for this machine, but dust collection was not. I removed 39 handfuls of dust from the cabinet after cutting.

One standout feature of the Dovetail Saw is an improved miter gauge: it comes with a long T-slot fence, bar adjusters and a flipstop for repetitive cuts. Very nice! The saw also includes a dadoing throatplate — a standard item not packed with every saw. But, all things considered, this Dovetail Saw seems a little overpriced to me.

## Powermatic PM2000

The PM2000, Powermatic's replacement to the Model 66, is handsomely equipped and was a solid performer here. It comes with a huge cast-iron top and your choice of a laminated table or workbench extension with an end vise.

The riving knife/guard system resembles JET's Xacta Saw and is easy to use. A low-profile riving knife is also available as an accessory. A bottom blade shroud enabled this saw to draw away all but a light dusting from inside the cabinet — very impressive.

This saw's box-style trunnion is a good-sized chunk of iron, which helped it cut thick hardwood without fuss or noticeable vibration. The rip fence is rugged with extra-thick plastic facings. PM2000's miter gauge has a sawtooth rack system for locking in angle settings, plus a 13" aluminum extension fence with T-slots.

Powermatic includes integral casters that crank up and down using the blade

bevel-tilt handwheel. It takes some practice to activate the feature, but it's a small hassle for the wheeled advantage.

An oversized bump kill switch is a wise safety feature, and so is the illuminated On button and removable magnetic lock-out key. The saw could use some means for hanging accessories and a better motor door latch. All in all, though, this is a sweet machine. Here's a pricey saw, but it's plentifully appointed and ready for hard daily use.

## Rikon 10-050

The 10-050 is a leaner version of Rikon's 10-110 right-tilting saw, which includes a big sliding crosscut table on the left side. For that reason, the 10-050 is the only right tilter here. The sliding-table's mounting blocks are still attached in case you want to add the table later (the accessory costs \$899.99).

It took me a while to get used to the right-tilt nuances: the blade tilt wheel is on the left, the arbor spindle projects from the right side of the throat opening, and the arbor nut spins on and off the opposite way. But, in testing, the saw's large box trunnion, triple belt drive and accurate rip fence were up to my cutting tasks. There's no blade shroud and hose below the blade to help capture dust in the cabinet, and about 13 handfuls of dust remained — an average result.

You'll like this saw's huge table area in front of the blade — a giant 16½" with the blade raised to 1"! The extra

*Tool Review continues on page 58 ...*



## RIKON 10-050

Rip Capacity: 48"R, 10"L  
Depth of Cut: 3⅞" (90°); 2⅞" (45°)  
Table: 29½"W x 42 ½"L  
Weight: 615 lbs  
Street Price: \$1,699.99  
[www.rikontools.com](http://www.rikontools.com)  
(877) 884-5167



*Rikon offers a sliding table accessory for this right-tilting saw (right). A second throatplate insert for dadoing (left) is a convenient standard feature.*

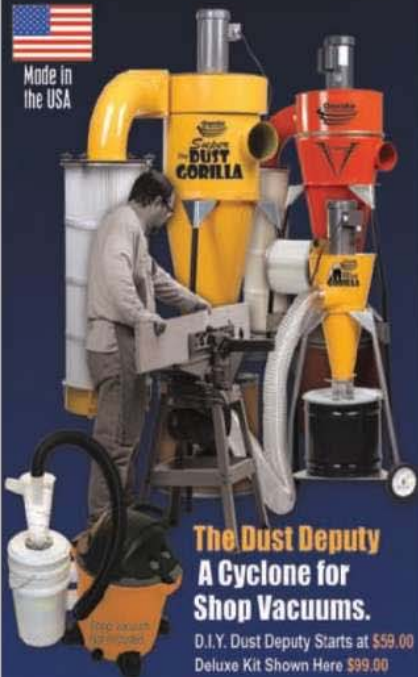




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# Tool Review continued

*Thanks to revisions to Underwriters Laboratories UL 987 Standard for Stationary and Fixed Power Tools, table saws designed after 2008 must now have a riving knife that rises and falls with the blade instead of a fixed splitter.*

room will sure come in handy for wide crosscuts.

Rikon informed me that since this saw came to market before the revised UL requirement for riving knives, it does not plan to update the saw's fixed splitter and guard with a riving knife system.

Other noteworthy features include a dado blade insert and a storage compartment on the bottom. There is no side extension table for this saw.

At day's end, I have mixed opinions about the 10-050. Its \$1,699 price tag would be a clearer value if it came with a side table, riving knife or blade dust shroud. If the sliding table seems appealing,

I think the 10-110 could be the better buy for \$2,199.99.

## **SawStop Professional**

SawStop's Professional Cabinet Saw fills a niche between its Contractor's Saw and the Industrial Cabinet Saw, which sells for about a grand more than this new Pro model. It seems a "right sized" version for the demanding home-shop user.

As you would expect, this Professional Saw includes the patented brake system to prevent severe blade injuries, and it comes with a pair of riving knives — one fixed to the guard and another for non-through cuts.

They swap quickly with a big locking lever. The guard has a unique limit rod stop that restricts you from cutting overly thick or tall workpieces that exceed the blade's height. It didn't interfere with normal cutting.

Looking inside, the trunnion assembly is a combination of cast-iron and steel parts. It's lighter in heft than other saw trunnions, but the saw ran as smoothly as heavier-trunnion saws. The blade brake is easy to reach through a side door; you'll need to switch it for dadoing (the accessory dado brake cartridge costs \$89).

SawStop provides an excellent plastic blade guard,

and it's fitted for a vac hose to capture dust above the table. The company says the system is 99 percent efficient when connected to a vacuum and dust collector. (SawStop will soon offer a hose accessory that will join the two dust ports into one main port on the cabinet back.)

While I couldn't test the dust efficiency claim, this saw provided outstanding sawdust collection for me. Only a tiny amount of debris escaped the top guard, so the table stayed very clean. The cabinet interior was almost dust-free. Kudos, SawStop, for your efforts toward cleaner sawing and healthier shop air quality.

## A Glimpse at Several Testing Process Protocols

A cabinet saw is an investment most of us make for a lifetime, so you want durability, accuracy, sensible features and plenty of power. To that end, I checked each saw's cast-iron tabletop for flatness with a straightedge and feeler gauge. All were within .003" of flatness — a satisfactory measure for me. I examined arbor shaft and blade flange runout with a dial indicator to see how closely blades would spin on a single axis and plane. I considered .001" reasonable for shaft runout and .002" acceptable for the flange. All 10 saws met

these tolerances. Then, I tested each saw's mettle and general manners by making 25 rip cuts, bevel rips and crosscuts on 3-ft.-long slabs of 8/4 poplar or birch. A fresh Freud LU84R combination blade was installed in each, and dust collection was provided by a new Oneida two-stage dust collector drawing 850 cfm of working pressure — more than sufficient for this purpose. While all the saws were up to the task of heavy cutting, dust collection efficiency varied widely. Finally, I scrutinized individual saw features carefully.



## SawStop Professional Cabinet Saw

Rip Capacity: 52"R, 12"L  
Table: 27"W x 44"L  
Weight: 449 lbs  
Depth of Cut: 3 1/8" (90°); 2 1/4" (45°)  
Street Price: \$2,999  
[www.sawstop.com](http://www.sawstop.com)  
(503) 570-3200



SawStop's revolutionary blade brake (inset) offers industry-leading safety, and the dust-collecting guard (left) promotes cleaner sawing in general.



For other details, the saw's fully adjustable rip fence locks down tight, and an oversized paddle switch shuts things down fast. Good operator controls also make sawing more pleasant. Here's a sophisticated, high quality but expensive saw.

### Choosing a Winner

In our strained economy, the "value" tension between price and features has never been greater, so picking a "best" saw is really tough. If cost is critical, Grizzly's G0691 puts a very solid cabinet saw

within easier reach. If you want a premium saw with today's finest advancements, the Unisaw, PM2000 and SawStop deserve top billing. Still, we award only one winner. So, given its safety benefits and superior dust

control, I think SawStop's Professional Cabinet Saw edges ahead of the other two competitors as my "Best Best" here.

*Chris Marshall is Woodworker's Journal's Field Editor.*

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Delta Int'l. Machinery Corporation	9, 10, 11, 12	13, 15, 17, 19	<a href="http://www.deltaportercable.com">www.deltaportercable.com</a>	Premier Bathrooms, Inc.	35	69	<a href="http://premier-bathrooms.com">premier-bathrooms.com</a>
Donjer Products Corp.	13	60	<a href="http://www.donjer.com">www.donjer.com</a>	Rockler Woodworking & Hardware	37, 49	47, 57	<a href="http://www.rockler.com">www.rockler.com</a>
Dowelmax		60	<a href="http://www.dowelmax.com">www.dowelmax.com</a>	Routerbits.com, Inc.	39	21	<a href="http://www.routerbits.com">www.routerbits.com</a>
Drill Doctor	14	9	<a href="http://www.drilldoctor.com">www.drilldoctor.com</a>	SawStop	40	2	<a href="http://www.sawstop.com">www.sawstop.com</a>
Dura-GRIT	15	21	<a href="http://www.duragrit.com/wj">www.duragrit.com/wj</a>	ShopBot Tools	41	3	<a href="http://www.shopbottools.com">www.shopbottools.com</a>
Eagle America	16	66	<a href="http://eagleamerica.com/wj1002">eagleamerica.com/wj1002</a>	Skil Power Tools	42	7	<a href="http://www.skiltools.com">www.skiltools.com</a>
Ebac Lumber Dryers	17	9	<a href="http://www.ebacusa.com">www.ebacusa.com</a>	System Three Resins, Inc.	43	13	<a href="http://www.systemthree.com">www.systemthree.com</a>
Epilog Laser	18	15	<a href="http://epiloglaser.com/wwj.htm">epiloglaser.com/wwj.htm</a>	Tech Mark	54	60	<a href="http://www.rojekusa.com">www.rojekusa.com</a>
Eureka Woodworks	19, 20	3, 60	<a href="http://www.eureka-business.com">www.eureka-business.com</a>	U-bild Woodworking Plans	44	60	<a href="http://www.u-bild.com">www.u-bild.com</a>
Fein Power Tools	51	72	<a href="http://www.feinus.com">www.feinus.com</a>	United Gilsonite Laboratories	45	9	<a href="http://www.ugl.com">www.ugl.com</a>
Forrest Manufacturing Company	21	57	<a href="http://www.forrestblades.com">www.forrestblades.com</a>	Woodfinder		66	<a href="http://www.woodfinder.com">www.woodfinder.com</a>
Franklin International	22	71	<a href="http://www.titebond.com">www.titebond.com</a>	Wood-Mizer	46	66	<a href="http://www.sawboards.com">www.sawboards.com</a>
Freud	23	5	<a href="http://freudtools.com/architectural">freudtools.com/architectural</a>	Wood-Mizer Blades	47	19	<a href="http://www.woodmizerblades.com">www.woodmizerblades.com</a>
				Woodworker's Journal		57	<a href="http://woodworkersjournal.com">woodworkersjournal.com</a>
				Woodworkers Source	48	66	<a href="http://www.101woods.com">www.101woods.com</a>



We give away a free tool in every issue of Woodworker's Journal! Just circle the reader service numbers of the companies you're interested in and answer the survey questions on the card at left. Send it in for your chance to win ... we even pay the postage!

# Tool Preview

## Sneak Peek: Bosch's Prototype

*Many woodworkers feel that you can never have too many clamps — but others feel, even more strongly, the same about routers. Good news for them: Bosch is gearing up to introduce a cool new combo kit.*

**At a Glance:**

- MR23EVS motor
- Fixed and plunge bases
- 1/4" and 1/2" self-releasing collets
  - Bit wrenches
  - T-handle hex wrench
- Three M4 screws for table mounting
  - Carrying case

**T**his issue of the *Journal* marks the first issue of the new year, and we're pleased to bring you news of one of the year's first new tool launches — you can read about it here before it happens.

Bosch sent the *Journal* a prototype of the combo kit from their new MR23EVS router series so we could get you an early look at their latest offering. This is a prototype and, as such, we won't be reviewing it as we would a production model.

By mid-year, you'll be able to purchase the routers from this series in either a fixed-base (MRF23EVS) or plunge-base (MRP23EVS) version, at a cost of about \$239 or \$259. The combo kit, of course, includes both bases, and will be priced around \$319.

One of the most innovative aspects of this router series is the trigger control system. A trigger-style power switch — with lock-on button — is located in the base handle for enhanced control of the router: as you're using it, the control is literally under your fingertips. According to Jim Stevens, Bosch's product manager for woodworking power tools, this marks the first time a power control of this type has been used on a professional fixed base router and on both the fixed and plunge bases of a professional router combo kit.



*This new combo kit from Bosch is feature-rich, with items such as new and unique power switch controls, as well as tried-and-true, must-have features — such as Constant-Response™ circuitry.*

Aside from the new bells and whistles on these routers, though, Bosch has wisely kept key features that have worked for them in the past — which shows a good deal of common sense: if it's not broken, don't "fix" it. In this case, the "heritage" feature is the Afterlock Micro Fine Depth Adjustment system on the plunge base. Previously found on Bosch's 1613 AEVS 2½hp plunge router, the Afterlock Micro Fine system is designed to give you easy and precise adjustment at any plunge setting — it has a plunge depth range of up to 3".

On the fixed-base MR23EVS series, you'll find a 1⅞" continuous microfine adjustment range. A hex wrench is included for making those microfine adjustments through the top of a router table, if you choose to mount the router for inverted use.

The motor in these routers is 15-amp, rated for 2.3hp maximum. It powers them up to a variable speed range of 10,000 to 25,000 rpm. As expected, this means the routers have a variable speed dial. The motor also has a



gentle soft start and, another carryover from previous Bosch products, Constant-Response™ circuitry, which means that the motor monitors itself to determine how much torque is needed at any given moment.



*The rpm control dial is located on the front of the router and is very easy to read. It would be great if Bosch would provide a chart relating numbers to rpm.*

That way, it can keep providing constant speed under load.

The MRC23EVS routers accept 1/4" and 1/2" self-releasing collets (one of each is included in the Modular Router System combo kit, seen here). The base opens to 3¾" on the fixed base model and 3⅝" on the

plunge. Sub-base openings on both models are 2".

LED lights are included in these routers so you can see down inside the bit area more easily. The lights stay on whenever the motor is plugged in, whether it's turned on or not.

So, in total, what's included in the Bosch MRC23EVS 2.3 hp Modular Router System? The official list: MR23EVS motor, fixed and plunge bases, 1/4" and 1/2" self-releasing collets, bit wrenches, T-handle hex wrench, three M4 screws for table mounting and a carrying case for the whole kit and caboodle.

It'll be available for you to see in stores in a few months (June); right now, all you get is a sneak peek of the prototype from its visit to our shop. We will reveal this much: It was quiet, well-balanced and very smooth on the test cuts we made.

#### DO YOU HAVE A BRAND-NEW TOOL?

Share your experience with fellow readers here. Contact us by writing to "Tool Preview," Woodworker's Journal, 4365 Willow Drive, Medina, MN 55340, or by emailing us at: [tools@woodworkersjournal.com](mailto:tools@woodworkersjournal.com) Please include your contact info with your tool preview.

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Mr. Heater  
800-251-0001

Rockler  
800-279-4441

NOTE: See Quik-Link on page 65 for web links to these tools.



Mr. Heater's  
Portable Buddy

Cold days in the shop are something many woodworkers would like to leave behind in the old year, and the new version of **Mr. Heater's Portable Buddy MH9BX** propane heater is designed to achieve that goal. It weighs in at eight pounds, with a fold-down carry handle for portability. Both a low-oxygen shut-off system and tip-over shut-off ensure safer operation. The Portable Buddy can be set to high or low heat, for 4,000 or 9,000

BTUs. A disposable 1-lb. tank of propane will power it for six hours, or a standard 20-lb. tank will provide 110 hours of warmth. Mr. Heater Portable Buddy has a suggested price of \$99.99.

Getting your tools warmed up, sharp and ready to go is also a good idea — and the **Diamond Wave™** sharpener from **Diamond Machining Technology** is the first diamond sharpener to combine convex and concave abrasive surfaces. Its unique wave shape provides radii ranging from 1/16" to 1" to sharpen curved tools, like those used for turning or carving, on the 10"-long Diamond Wave. It's constructed from micronized diamond coating on a steel substrate, available in either 600- or 1,200-grit versions and has a suggested price of \$59.99.

Raring to go in the shop often means routing, and **Makita** has come out with two new 3/4hp, 15-amp routers. The RP1800 is a plunge router with 22,000 rpm; the RP2301FC is a plunge router with variable speed from 9,000 to 22,000 rpm. Both have up to 2 3/4" plunge depth capacity, quick-release plunge depth adjustment and three preset depth stops, and the RP2301FC also has built-in



Diamond Wave™  
sharpener



Makita RP1800  
plunge router



twin LED lights for illuminating the work area. The Makita routers accept 1/4"- and 1/2"-shank bits, with suggested prices of \$259 for the RP1800 and \$329 for the RP2301FC.

Another 3/4hp router, this one with an Aussie accent, is the **Triton TRA001**, as it's known in the U.S. and Canada, where it's now distributed by **HTC Products** (the Aussies, measuring by a motor wattage system, call this same router the 2400W). The TRA001 has variable speed of 8,000 to 21,000 rpm and a plunge range of 0 to 2 3/8". Bit changes take place through the base, with a single wrench. The TRA001 accepts 1/2" collets and has a 1/4" collet adapter, and it can quickly change from plunge to rack-and-pinion mode. It also now comes with a below-table winder, which allows you to more easily make cutting depth adjustments from above when the TRA001 is mounted in a table — no router lift system needed. Its listed price is \$299.



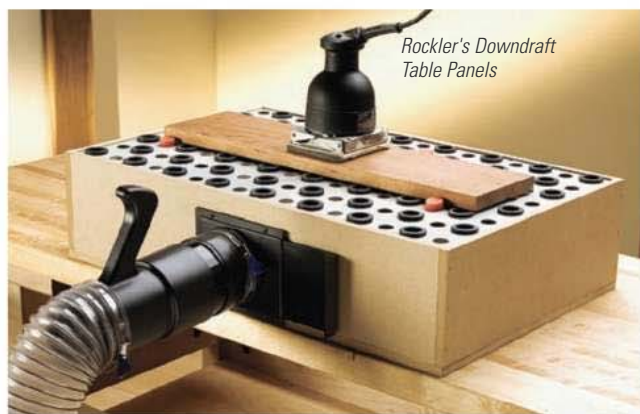
Triton TRA001

Sanding may not be as much fun as routing, but it's a shop necessity — and if you can make your sanding area into a project, so much the better. **Rockler** is now selling *Downdraft Table Panels* that will assist in this endeavor: the 6 3/4" x 16 1/2" solid steel panels have non-slip rubber grommets and removable stops to keep your work from sliding while you're sanding, with air holes to assist in controlling the dust your sander kicks up. A set of two panels sells for \$25.99 (with a

free downdraft table plan also available from Rockler).

Now it comes to nailing — possibly with **Hitachi's** new 18-gauge finisher, the **NT50GS**. Powered with a combination of lithium-ion battery and gas fuel cell, the NT50GS needs neither a cord nor an air compressor attached to it. The two 3.6-volt lithium-ion batteries that come with the tool have an indicator light directing you to place them in the charger (also included), while the 0.6-oz. fuel rods have a life expectancy of 1,200 shots apiece. The NT50GS drives

*Continues on page 67 ...*



Quik-Link takes you directly to the web page on which these products appear! No navigation necessary ... just go to [woodworkersjournal.com](http://woodworkersjournal.com) and click on the Quik-Link icon shown above.

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# What's In Store continued



Hitachi's NT50GS

fasteners from 5/8" to 2" and has a magazine capacity of 100 nails, with a reload indicator on the magazine and a no-mar cap. The total package, which also includes a carrying case and 3.6-volt lithium-ion screwdriver that runs on the same batteries, has a suggested

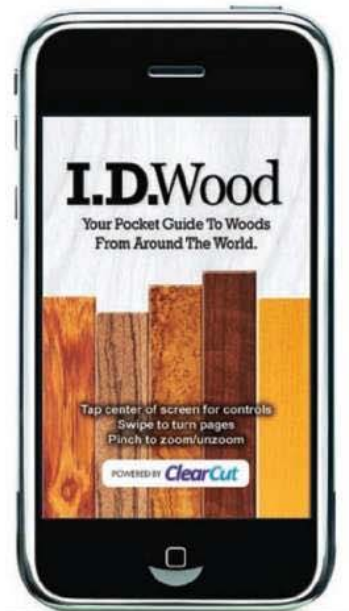
price of \$299. The fuel rods are sold separately.

If you're making note of the amount of nails you'll need, or taking any other shop calculations, you're likely using a pencil. The **GripSharp™** helps you hold on to that pencil — and to sharpen it. It's a combination pencil grip and leave-on pencil sharpener: twisting the wide-barrel design sharpens the pencil, removing only the wood, not the lead, to create a stronger, thicker point and extend pencil life. It's available in several colors, each of which sells for \$2.89.



GripSharp™

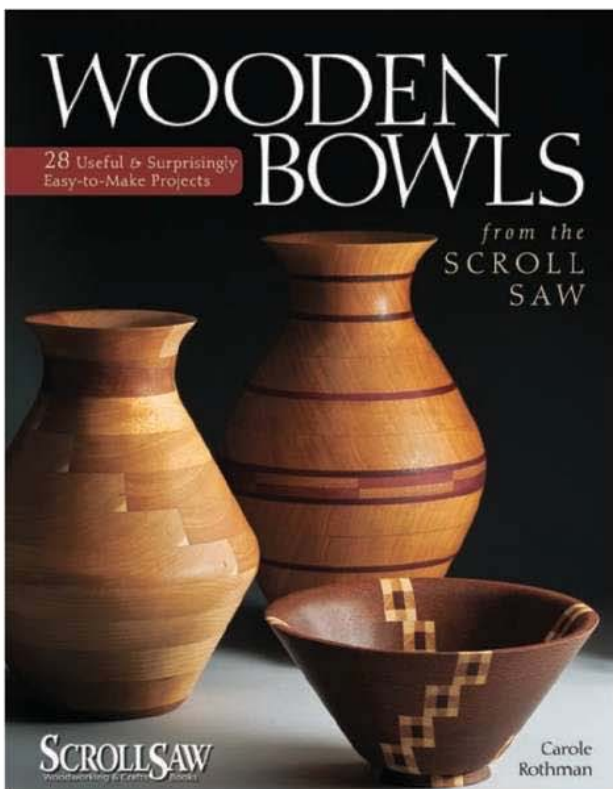
For noting which woods are in your collection of samples, there's now a high-tech option that turns your iPhone into a tool for the shop — or the lumberyard. The *I.D. Wood application* works on either an iPhone or an iPod Touch to allow you to search through over 50 wood species (more forthcoming). Matching is based on images, species, durability, common uses and sustainability. There's a detailed description of each wood, including its woodworking properties, and you don't need to be connected to the Internet to access all of that information. The *I.D. Wood* app sells for \$2.99.



*I.D. Wood application*

Looking for a new project to use some of those wood samples on? The book *Wooden Bowls from the Scroll Saw* by Carole Rothman (**Fox Chapel Publishing**, ISBN 978-1-56523-433-8, priced at \$19.95) introduces new techniques for creating the kind of bowls you'd typically find coming off a lathe. No need for that here: just a flat piece of wood, a scroll saw ... and the desire, common among woodworkers, to go to the shop and make something out of wood.

— Joanna Werch Takes



# Finishing Thoughts

## Staining Hardwood Plywood

By Rob Johnstone

*Why does some stained plywood look just like the solid wood it is joined to and some just looks weird? The answer may not have anything to do with the stain.*

Rotary Cut Veneer



Quartersawn Veneer

I bought an existing home a couple of years ago. One of the things I really liked about the house was the kitchen. The faceframe style cabinets were obviously handmade, and not only that, they were clearly not made by a cabinet shop but by the previous homeowner. He built them really well, taking the extra steps to transform a job from good to excellent.

But the one thing he fell short on was the aesthetics of the cabinet doors. They look like plywood masquerading as hardwood. They were stained the same color and finished with the same varnish — but they look very different from the solid oak faceframes and end panels.

### Why Different Results?

So why should that be? If you use red oak lumber and red oak plywood, why do they often look so different — especially once they are stained?

Here is the most important reason. Even though they are the same species, they may not actually be really the same. What do I mean by that? All hardwood plywood sheets are not created equal. (And in that designation, I include sheetstock like hardwood veneered MDF, particleboard and your typical veneer core hardwood plywood.) Often the less expensive hardwood plywood sheets are covered with rotary cut veneer. Rotary cut veneer is made just like it sounds.



***The author built this cabinet from quartersawn red oak lumber. The large 1/4" plywood panels on the doors are laid up with quartersawn red oak veneer. When stained, the two different wood products look virtually identical. They would also look just as good together if they were simply top coated with a natural (clear coat) finish.***

The mill mounts a green, prepared log between two pivots. Through industrial magic, they start the log spinning at a pretty good clip. At this point, a very long and very sharp cutter is slowly advanced into the log and veneer starts to flow off the spinning log like water. It is

a very efficient way to make veneer. But when you consider how lumber is cut from a log, you can see why the plywood will look different. Lumber is cut in plainsawn, quartersawn and riftsawn aspects. No lumber is made with a “spin-around” style cut.



**The hardwood on the face of this bookcase is mahogany. So is the plywood shelf to which it is glued. They're stained with the same product, but the look is dramatically different.**

I can hear some of you asking "why is he talking about how plywood is made and not about how to stain hardwood plywood to look like solid hardwood lumber?" So here goes: buy hardwood veneered plywood that has the same grain pattern as the hardwood lumber you are using. If you are building with plainsawn lumber, use a sheetstock that features plainsawn veneer. Using quartersawn lumber — well, you get the picture.

**What's the Problem?**

The problem with matching stained plywood to solid

lumber is how the veneer is cut, not how the stain is applied. If you match like grain patterns in the plywood and the lumber, and you prepare the surface of your piece similarly, you will get good results when you stain. And by the way, it will also look great if you choose to finish it without any stain.

You can find hardwood plywood with various types

of veneer pre-made at lumberyards that deal with cabinet shops regularly. (Many specialty woodworking stores like Rockler Woodworking and Hardware will special order plywood for you if you ask.) You can even order plywood with custom grain patterns (book-matched, for example) that you would prefer from some sellers.

**CONTACT US**

with your "Finishing Thoughts" by writing to Woodworker's Journal, 4365 Willow Drive, Medina, MN 55340, or by emailing us at:

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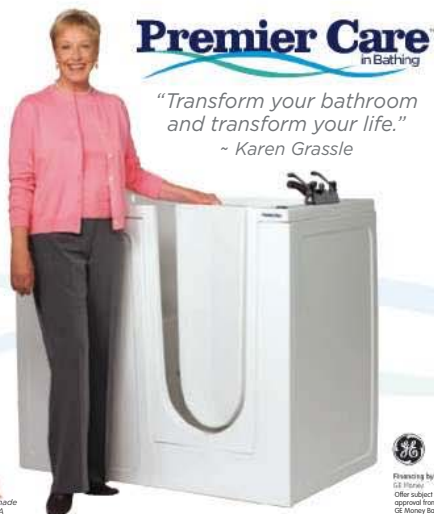
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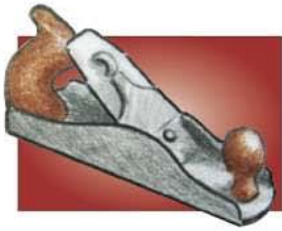
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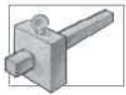
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# Skill Builder



## The Remarkable Hand Plane

*Woodworking's Wonder Tool*



***It is easily argued that the hand plane has a greater range of capabilities than any other single hand or machine tool. When set coarsely, a plane will remove shavings as thick as 1/8" from the face or edge of a board. Set fine, it will slice a shaving that is just one or two thousandths of an inch thick — leaving behind a surface as smooth as a baby's bottom.***

### Skill Builder 2010

This year, Skill Builder will be all about hand tool woodworking, starting with the hand plane. As a method of woodworking, hand tool techniques are as effective today as they were before the shop was electrified. And the skills that one acquires using hand tools often are applicable even when the switch is flipped. As in previous years, each Skill Builder article will have an in-depth supporting article on the web.

Consider the hand plane for just a moment. No other woodworking tool evokes the idea of hand tool joinery more intensely than the bench plane. When lithographers of old set out to convey the essence of woodworking, they used the image of a hand plane — sometimes in the hands of a craftsman, but often it was simply the image of the plane alone.

Examining their choice, there is every reason to believe that they had it right. Over hundreds of years, the pedestrian hand plane has built a legacy that demands respect.

Again, consider this: when set coarsely, a plane will remove shavings as thick as 1/8" from the face or edge of a board. Set fine, it will slice a shaving that is just one or two thousandths of an inch thick. That sort of cut will leave behind a surface that is

**“If you had just invented a bench plane, it would be heralded as the wonder tool of the workshop”**

— Ian Kirby

smooth enough for even the most finicky of finishers.

It is easily argued that the hand plane has a greater range of capabilities than any other single hand or machine tool. Indeed, even keeping to the singular category of “bench planes,” a bit of nomenclature that has its use, but is not exacting by any means, the variations are amazingly broad. Many woodworkers own half a

dozen or so bench planes of differing dimensions. Others limit themselves to two or three and find that sufficient.

To use a bench plane successfully, you must have two things right before you start. The blade must be sharp, and the plane must be set up correctly. Properly fettled is the term that describes a plane ready to be used. The good news is that there are few old planes that can't be put in fine fettle. The bad news is that new planes, sadly, often need fettling as much as the old ones.



For a detailed article on using hand planes, go to [woodworkersjournal.com](http://woodworkersjournal.com) and click on the More on the Web tab shown above. Or send a large SASE to Woodworker's Journal, Skill Builder 13, 4365 Willow Drive, Medina, MN 55340.

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