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WOODWORKER'S JOURNAL

"America's leading woodworking authority"™

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Guide and Router
Bit Primer
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Super Easy, Elegant and Fun!

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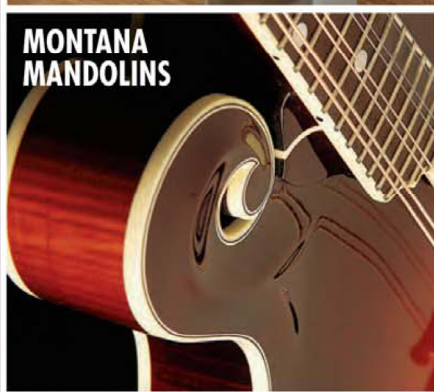
BOOK-MATCHING MAGIC



FOLD-DOWN OUTFEED TABLE



MONTANA MANDOLINS



February
2009



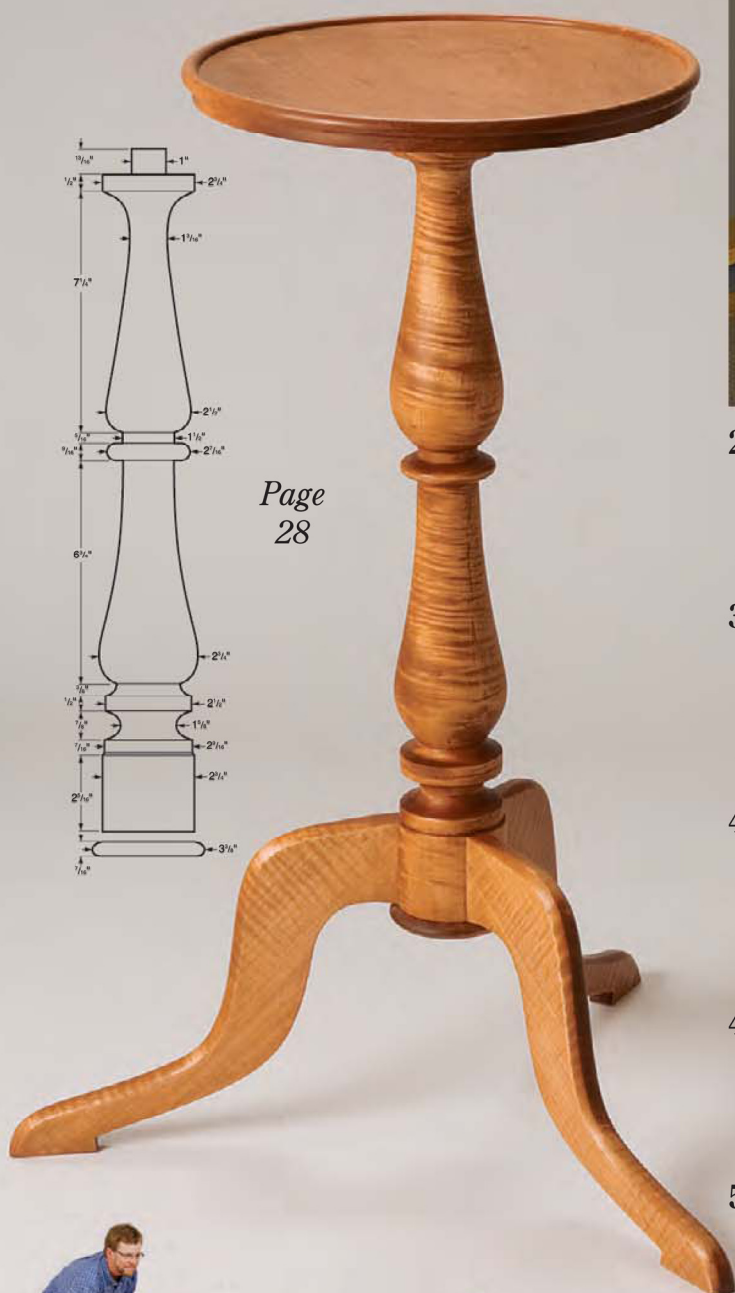
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Ultimate Routing: More than a Bit of Info



More on the Web ... You know you can make a certain something with a specific router bit — but did you ever wonder what MORE that bit could do for you? What secrets it's concealing? Now, you have the opportunity to find out.

With this month's **More on the Web** feature at our website, Ralph Bagnall begins a series that'll show you how to get the most from your bits. You'll learn how to set each one up, take it through its paces and get the results you want.

First up: the Multi Profile bit. This odd-looking bit can produce a huge number of useful molding profiles, and Ralph will show you how to use it to make large, complex moldings. Check it out behind the More on the Web tab at www.woodworkersjournal.com.

PLUS: Don't forget to check out our FREE, online Router Buyer's Guide ... a searchable database covering 88 routers!



Woodworker's Journal eZine ... If you love to show off your woodworking, we'll soon have the place for you! In early 2009, the Reader's Project Gallery becomes part of our eZine. If you don't already receive our electronic magazine, with new and different content than this print magazine, sign up through the form at www.woodworkersjournal.com. Then, start sending in your pix of your projects, your shop, your trip to Holland (wait! only if it was all about the wooden shoes you brought back ...).



Skill Builder ... A new year, a new skill: spend 2009 learning all about joinery, with Sandor Nagyszalanczy's set of Skill Building articles. You'll read the basics — of, this time, the Butt Joint — on the last page of this magazine. But wait, there's more! To find down-to-the-last-detail coverage of this joint, including alternate methods of constructing it, you'll need to visit the "Skill Builder" link on the "More on the Web" page at www.woodworkersjournal.com.



Quik-Link ... The new tools in Chris Marshall's Tool Preview are just so cool, we know you'll want to read more about them — as well as the ones in What's In Store. Just click on the **Quik-Link** tab at woodworkersjournal.com to go right to the spot on the manufacturers' websites where you'll get all the nitty-gritty on the specs.



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THE VOICE OF THE WOODWORKING COMMUNITY

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The Cost of Beauty

Recently some of you have challenged my species selection on various projects (those ebonized ash legs on our bubinga table in the April issue, for example). You are, of course, free to choose which species to use on any of our

"The most common and visible mistake woodworkers make occurs when they select their material."



projects, but the letters raise an important question for all woodworkers: "Why don't you just stick with regular wood — like plain old red oak? Is it really worth it to spend the extra money?"

Talk about your loaded question! Here comes my equally loaded answer.

My opinion is that the most common and visible mistake woodworkers make occurs when they select their material. To put it bluntly: if the wood you are using is boring to look at, your project will be, too. Sprucing it up with a cool stain or shiny finish will just give you a shiny, more colorful, boring-looking project. (You don't need to ask how I know this ...)

Purchasing stock with more attractive figure will cost additional money, but it will yield more attractive results. With an online price survey, I found I could purchase flatsawn (i.e., "plain old") red oak for about \$3.30 a board foot (bf). For quartersawn red oak, a much nicer grain pattern to most folks' eyes, the cost doubled to \$6.60/bf.

Even a math-challenged editor can tell the quartersawn costs twice as much. How does that impact a real project?

Let's use the example of our Arts & Crafts bookcase from the August 2008 issue (we built it from quartersawn longleaf pine at about \$6.50/bf). The bookcase requires roughly 32.5 board feet of solid lumber. To build it using flatsawn red oak would set you back \$107.25. In quartersawn red oak: \$214.50. If you opt for the traditional choice of quartersawn white oak, which sells for \$7.10/bf on my price survey, your material cost would jump to \$230.75 for the project.

It seems to me that if you are going to invest 30 to 50 hours building a wonderful project, the additional hundred bucks (in this case) for great-looking lumber is well worth the investment. Choosing between a well-made but plain-looking project or a well-made and gorgeous-looking project? For me, the answer is easy. Especially if your name is going to be associated with the project for the next 50 years (or more!).

I understand that beauty is often in the eye of the beholder, but this beholder likes to look at beautiful wood. And, within reason, I am ready to bear the cost of that beauty.

What's in Store for Stumpers:

With this first issue of the new year, we are making a couple of changes. We've moved *Stumpers* into our *Questions & Answers* department, where it seems to naturally fit. In addition, we are revamping our *What's In Store* department, and I've put Joanna Werch Takes, my senior editor, in charge of that task. Our art department has made a few smaller changes to the magazine, all aimed at improving our presentation. Drop me a line and let me know what you think. This is your magazine; I want to know how we're doing for you!

—Rob Johnstone

JANUARY/FEBRUARY 2009

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Phone: (972) 392-1892

Fax: (972) 392-1893

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EDITORIAL INQUIRIES

ROB JOHNSTONE

rjohnstone@woodworkersjournal.com
763-478-8255

JOANNA WERCH TAKES

jtakes@woodworkersjournal.com
763-478-8303

CHRIS MARSHALL

cmarshall@woodworkersjournal.com
614-746-2985

SUBSCRIPTION INQUIRIES

(800) 765-4119 or

www.woodworkersjournal.com

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Beautiful Bubinga Heirloom



Ohio woodworker Ronald Blank took six months to complete his table. For this woodworker, it was all about the wood.

And He Likes the Legs, Too!

I wanted to compliment you on the terrific April 2008 bubinga articles ["A Once-in-a-Lifetime Bubinga Tree"; "Waterfall Bubinga Sideboard"]. I have never seen such beautiful wood. I have been looking for that once-in-a-lifetime project that can be handed down to my family for generations to come. After reading the article, I knew immediately that this was the project!

The project took me a total of six months and WOW! I am so thankful to you.

*Ronald Blank
Gahanna, Ohio*

Shop Table Adjustability

George Vondriska describes an inexpensive, practical, highly flexible table with storage, mobility and other conveniences, complete with all the information needed for its easy construction ["Rolling Shop Table," October 2008].

My sole criticism of the table is that most shops, including mine, have additional floor equipment

(router table, planer) that also benefit by having outfeed tables, and they are of different heights. Hence, truly useful shop tables should be built so the table height can be easily adjusted. Simply by adding adjusting screws accessible through small holes in the top at each corner, this objective can be met at minimal cost.

*Pete Pattee
Ames, Iowa*

Hip to Squares

I enjoyed the article on combination squares by Bill Hylton ["The Irreplaceable and Underappreciated Combination Square," October 2008]. However, these high quality squares are not really ideal for woodworkers.

When was the last time you needed to measure to a 64th of an inch? Even if you did, a one percent change in

humidity would change your measurement. All those fine markings just make it harder to see.

*Wayne Mitzner
Towson,
Maryland*

Excellent article on the combo square by Bill Hylton. However, I disagree on a couple of points, primarily the use of blades longer than the standard 12" one. As a retired 40-plus-year home builder, as well as a former cabinet shop owner, it's my belief that a combo square's uses should be limited to about 10" or less. With just a 3½" head, the slightest imperfection on the edge will throw things out of square.

*Edwin A. Powers
Archer, Florida*

Letters continues on page 16 ...



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.

Mail Call! Contact us by writing to "Letters," Woodworker's Journal, 4365 Willow Drive, Medina, Minnesota 55340, by fax at (763) 478-8396 or by email: 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.



Festool: Amps or Watts?

Your otherwise good article on random orbit sanders ["Random Orbit Sanders," *August 2008*] has a comparison chart in which you list watts used by Festool models under the amps columns. For every other model you provide the amp rating. What are Festool's amp ratings?

*Peter Carlsen
St. Paul, Minnesota*

Editor's Response: *Festool's ETS 125 EQ is rated at 1.67 amps and their RO 125 FEQ at 4.2 amps. Remember the formula: watts over voltage equals amps.*

Sing a Song of Saw Blades

I have a comment on the answer in the *October 2008* "Questions & Answers" concerning "singing" saw blades. I own a picture frame manufacturing company, and we run 12"-diameter saw blades on three double miter saws for up to eight hours each day. Several years ago, we had some singing blades. After consulting with the manufacturer, we were told to melt some paraffin (candle) wax and fill the small slots that are relief cut into the steel blade. After using that method for several years, we have never again been bothered by that shrill singing noise.

*Don Nanney
Norcross, Georgia*

Although it is [a saw blade] that is singing, I'll bet the problem lies elsewhere. Probably a motor bearing. The blade is only acting like a diaphragm on a speaker, amplifying the vibration.

There is a simple way to verify this. Run the saw for a few minutes. Then, after unplugging, grab the end bells on the motor and check to see if one is hotter than the other. They should both be room temp. You could buy a new motor, but one drop of oil in the correct spot is a lot cheaper. Take off the end bell, being careful of any shims that may be present, and visually inspect

the shaft and bushing. If it is a ball bearing, it is probably sealed and therefore should be replaced. Very gently polish the shaft and bushing with 0000 steel wool, then apply a drop of oil before reassembly. There is probably a felt pad in there around the bushing, and this should, of course, be oiled also.

ARE YOU READY FOR THIS?



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This procedure is much simpler than it may sound. Sometimes the hardest part is just gaining access to the motor, depending on the saw configuration.

*Dan Thompson
San Jose, California*

Longleaf Pine and Waterfall Bubinga

Having been making segmented wood bowls for a long time, I was moved by your article ["Return of the King: Longleaf Pine," *August 2008*] to make one out of longleaf pine as a little

experiment. Believe me, turning longleaf pine was a new experience. The spring wood gouges easily, creating flaws that are deep and difficult to remove. So it's cut ... sharpen, cut ... sharpen, cut ... sharpen; oh hell, maybe I'll just sand the sucker out with some 40-grit sandpaper!

*George Kornfeld
Acton, Massachusetts*

I enjoyed your article on bubinga ["A Once-in-a-Lifetime Bubinga Tree," *April*



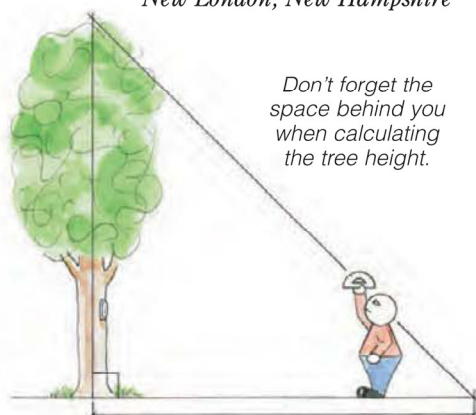
2008]. I just finished a complete remodel of our bathroom, and I built this vanity from my design featuring waterfall bubinga and curly cherry.

*Anthony Terzis
Marysville, Ohio*

High School Geometry

Your responder and/or artist need a math refresher ["Letters," *October 2008*]. To get an accurate height of the tree, one needs to measure the vertical distance from the 45 degree mark on the protractor to the ground and add that to the distance that point is from the tree.

*Bob Kren
New London, New Hampshire*



Mr. Simeon Ross's method of measuring the height of a tree from the ground saves one from climbing the tree, but the height will be short by the distance of his eye above the ground.

*Howard Sahl
Longmont, Colorado*

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Determining Dovetail Differences

THIS ISSUE'S EXPERTS

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*.

Betty Scarpino is the woodturning columnist for *Woodworker's Journal*. Some of her turnings are in the Smithsonian collection.

Ken Horner is a retired organic chemist, woodworker and author of the *Woodworkers' Essentials* three-book series.

Contact us by writing to "Q&A," *Woodworker's Journal*, 4365 Willow Drive, Medina, MN 55340, by faxing us at (763) 478-8396 or by emailing us at: QandA@woodworkersjournal.com. Please include your home address, phone number and email address (if you have one) with your question.

Q I'm confused: what's the difference between "half-blind," "through" and "rabbeted" dovetails?

David Sawyer
Palm Bay, Florida

A The names of these three dovetails give you a hint as to how they work: On a half-blind dovetail, the end of the tail board is imbedded in the pin board, so the joint is only visible on the side. From the front, the joint is "blind." For through dovetails, you see the ends of both the pins and tails, since the parts pass right through each other. Rabbeted dovetails are really just modified half-blinds. The tail board sets into a deep rabbet on the pin board instead of being flush with its end. They're useful for building overlay-style drawers where the drawer box front is also the drawer face. The projecting tongue of the rabbet forms a lip to cover gaps around the drawer opening.

— Chris Marshall

Q I was reading about aligning a tabletop with biscuits at glue-up, and the author advised to not glue the biscuits in — arguing they only serve an alignment purpose. Why wouldn't you want to use the biscuits' full potential and glue them into the joints?

Mark MacMullen
Carrollton, Texas

A Deciding whether to glue biscuits in place or not depends on the type of glue joint you are making with them. Gluing up a tabletop usually consists of edge gluing (technically a butt joint) a few prepared boards together. Done correctly, the butt joints will be so strong that the actual fibers of the wood will break before the glue joints fail. Biscuits certainly make the job of

aligning the boards much easier, especially if the pieces are "longish" (over 24" as a rule of thumb). Gluing them in place will not increase the strength of that type of butt joint in any way that makes a difference. There is also a very slight chance that if you do glue them in place, it may exacerbate the possibility of the biscuit's shape telegraphing through to the surface of the tabletop. So in this case, why glue them in place when there is no strength advantage and you might hurt the look of your piece?

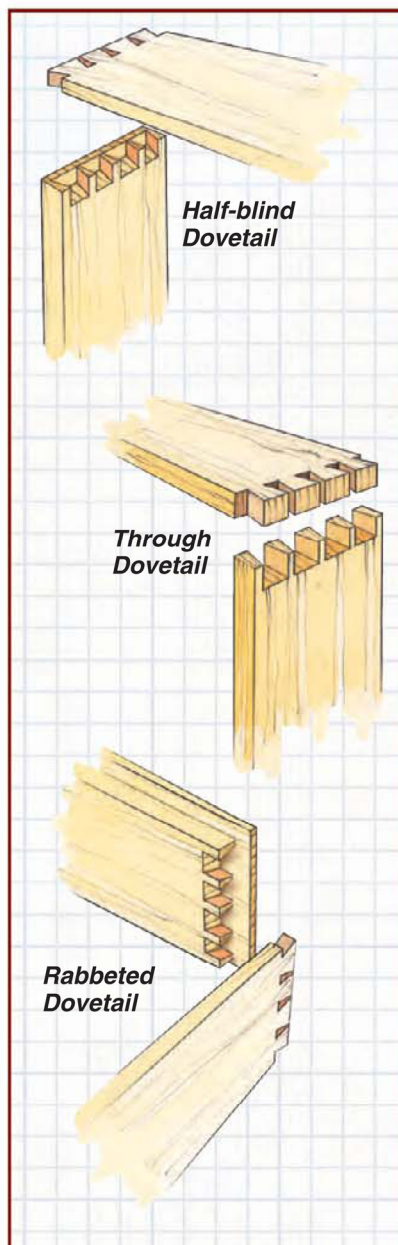
With that said, if you are using biscuits to join stiles and rails, breadboard ends or miter joints — all examples of end grain joinery — in these situations biscuits absolutely add strength to the joints when glued into their slot mortises. For those tasks, keep Frank Grant's mantra in mind: "Glue is your friend!"

— Rob Johnstone

Q I recently received a detail gouge as a gift and was wondering why the grind looks and feels rough. Do I have to run it through a light grind to smooth it before I start turning? I thought I could just grab a new tool and start turning.

Amy Nielsen
Maple Valley, Washington

A Turning tools do not necessarily come out of the package smoothly sharpened, although some are better than





For edge grain butt joints, glue provides all the muscle necessary. Biscuits help in alignment, but not strength.

others. In most cases, you will need to at least hone the bevel and cutting edge because the tool was only roughly ground by the manufacturer. In this case, I'll assume that the profile of the cutting edge and the bevel angle are correct for your needs.

In the worst case, the entire cutting edge will need to be reground to change the profile, adjust the angle of the bevel and finely sharpen it. First, use a coarse-grit

grinding wheel to reshape the tool, then switch to a fine-grit wheel to smooth the bevel and cutting edge and/or hone the tool's bevel and edge with a wet stone.

Some inexpensive turning gouges also have milling marks left inside the flute. These fine lines reduce the sharpness of the tool's edge. Remove them with a curved stone (known as a slip). Take care to avoid rounding over the tool's cutting edge.

— Betty Scarpino

RECALL NOTICE!

A recall is in effect involving model number DC608 DeWalt 18-volt Cordless 2" 18-Gauge Straight Brad Nailers with date codes 200728 through 200821. The nailer can operate when the safety is in the locked position or when the trigger is not pulled and the contact trip is depressed. For more information, visit www.DeWalt.com or call 866-220-1481.

Continues on page 20 ...



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QUESTIONS AND ANSWERS



WINNER! For simply sending in his question on yellow glue, Richard Z. Faunce of East Palatka, Florida, wins a **Steel City Bench Mortiser (Model 25200)**. Each issue we toss new questions into a hat and draw a winner.

Q How come I have to put yellow glue on both boards of a glue-up? I like to just slop it on to one edge, clamp the two together and wipe up the squeeze-out.

*Richard Z. Faunce
East Palatka, Florida*

A You might be OK using the method you describe, but I'd take a little more time and put a thin line of glue on each surface.

A successful PVA glue-up proceeds as follows: glue is spread on the surface of both pieces of wood where it penetrates and glue molecules begin to react with cellulose molecules. If any part of the surface of one board looks dry, add some more glue. The boards are then clamped together

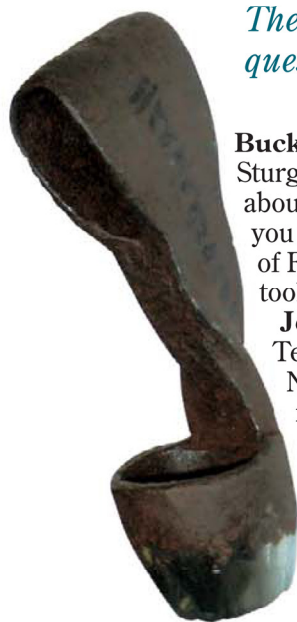


When using PVA glue, always be sure to apply a thin coating of the adhesive to both of the joint surfaces.

and excess glue is squeezed out. The thin line of glue on the mating surface of one board bonds with glue on the surface of the other board. Some glue has bonded with cellulose

molecules in the wood, and some glue is bonding with other glue molecules. Both adhesion (glue bonded to wood) and cohesion (glue bonded to glue) must be present for a strong joint.

STUMPERS



There's a hole ... in what? That's the lingering question regarding this mystery tool.

Buck Buechner and **Len Wilbur** of Sturgeon Bay, Wisconsin, queried us about the tool at left — and many of you answered, like **Joann Brennan** of Federal Way, Washington: “The tool looks like a hollow hole punch.”

Jerry Wing of Knoxville, Tennessee, and **Jim Fergen** of North St. Paul, Minnesota, had a more traditional name: “an old dinker die. The round end has a ‘sharp’ edge on it. The long part would be struck with a hammer.” To cut a hole in what?

Shoe leather (or shoe wood),

said **Peter Carlsen** of Saint Paul, Minnesota, **Jim Blevins** of Sand Springs, Oklahoma, and **Joe Weber** of Greenville, South Carolina.

Or leather, for “harness or saddle” (**Duane Leary** of Snowflake, Arizona); for belting for installing fasteners on conveyor belts (**Kevin Hess** of Vintondale, Pennsylvania); or for sails (**Lyman Smith** of South Sutton, New Hampshire).

Finally, the best woodworking answer comes from **Jim Doering** of Pekin, Illinois. When building a barn, he said, someone would put an axe handle in the tool's top opening, strike the tool with a mallet and drive the round end into oak or hickory end grain to create a pin for post-and-beam construction.

— Joanna Werch Takes

WINNER! Jim Bazemore of Eagan, Minnesota, wins a **Porter-Cable Low Profile Sander (Model 390K)**. We toss all the Stumpers letters into a hat to select a winner.



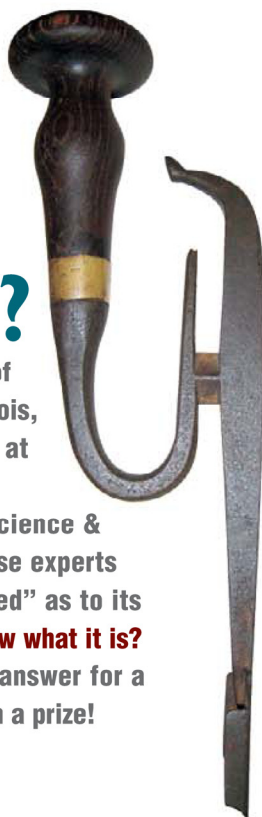
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— Ken Horner

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Allan Kirson of Glencoe, Illinois, saw this tool at the Chicago Museum of Science & Industry whose experts were “stumped” as to its purpose. **Know what it is?** Send in your answer for a chance to win a prize!



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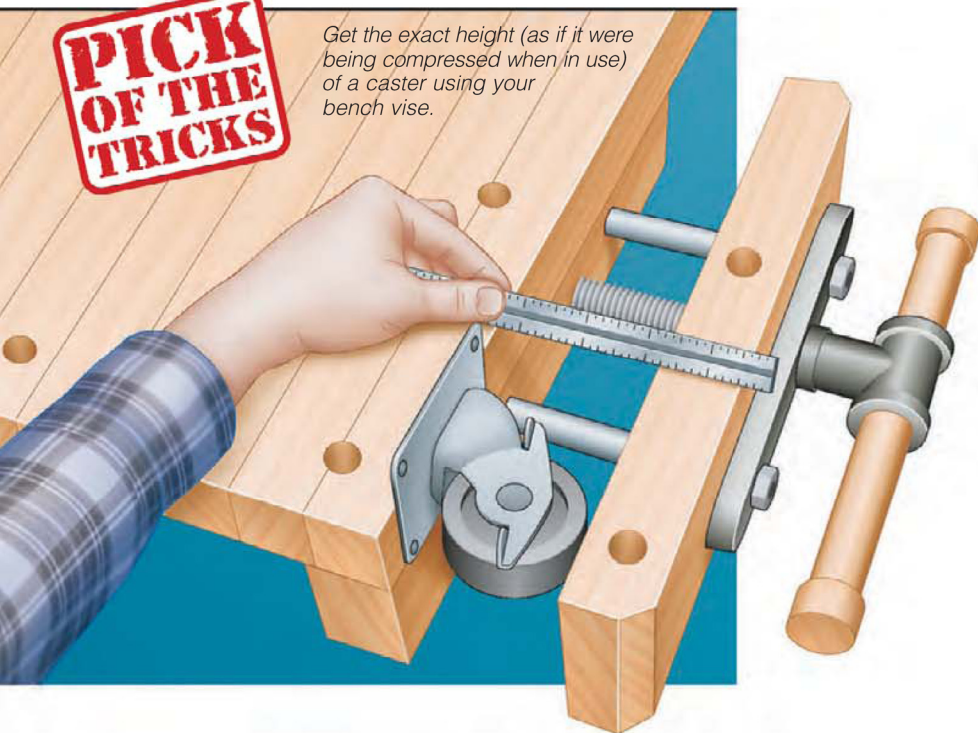
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Cooking Something Up in the Shop

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Give Casters the Squeeze

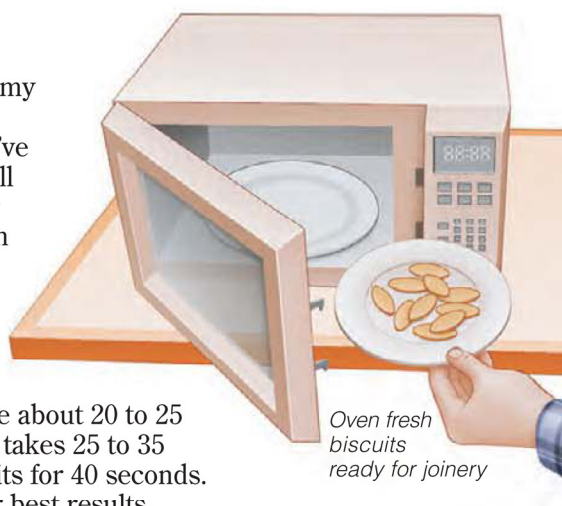
I build my shop carts and tool stands the same height as my workbench and stationary tools, and I put them on casters to keep everything mobile. Measuring the true height of casters used to be a head scratcher until I came up with this simple method: all you do is clamp the caster in your bench vise and measure the distance between the jaws. You'll get the exact height right off the bat.

*Serge Duclos
Delson, Quebec*

Hot Cure for Swollen Biscuits

Like most woodworkers, I buy my plate-jointer biscuits in large quantities. Regardless of how I've tried to keep them dry, they still seem to absorb moisture in my damp shop until they don't fit in biscuit slots. I've got a solution that drives out the moisture and shrinks them back to the compressed size. Just pop them in the microwave. In a 1,500-watt oven, #0 biscuits take about 20 to 25 seconds on high heat. Size #10 takes 25 to 35 seconds, and I warm #20 biscuits for 40 seconds. Nuke them right before use for best results.

*Vincent Nocito
Blue Bell, Pennsylvania*



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Anti-static Shield Wipes

My face shield is a regular companion in the shop, but the plastic builds a static charge that attracts dust. Here's an easy way I've found to clean it and reduce the static cling. Wipe the shield with a fabric softener sheet. You can use them over and over again, then grab a fresh one from the laundry room whenever you need it.

*Jerry Holbrook
Syracuse, New York*



Square Setup Fence

Recently I needed to drill centered holes through some wood blocks, and my Rockler Clamp-It™ Assembly Square found new purpose as a handy drill press fence. It offered full contact surfaces on two sides of the blocks for solid support during drilling. I could reach the blocks from all around, which made it easy to hold them securely without additional clamping. The Clamp-It was simple to set up, too. I lined up the bit with the centerpoint of my block, slid the plastic square up against the wood and clamped it to the table. Worked like a charm.

Jayne Thorson
Ann Arbor, Michigan



WINNER!

In addition to our standard payment (below) Serge Duclos of Delson, Quebec, 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.

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"the Grex P635 is the Lexus of pinners" <i>Wood Magazine, September 2005</i>	Grex P635 Voted BEST BET of headless pinners <i>Woodworker's Journal, April 2007</i>	Grex P635 Voted BEST NEW TOOL in 2005 <i>Popular Woodworking, December 2005</i>	"Our prayers to the pneumatic goddess were answered ... with the Grex P635 ..." <i>Popular Woodworking, December 2005</i>

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Montana Mandolins in the Making



Sounds from a Shop

Luthiery in Big Sky Country

This past summer, I went out to Bozeman, Montana, for a reunion of acoustic musician friends. My cousin Tom “Mandotom” Murphy hosted the get-together. Tom showed us his new, beautiful maple octave mandolin which was custom-built by the luthiers at a shop about 45 minutes from his place.

Sound to Earth is owned by Bruce Weber and his wife, Mary, who manufacture Weber mandolins, mandolas, octave mandolins, archtop guitars and, more recently, resonator (resophonic) guitars.

Bruce was formerly the manager of the Flatiron Mandolin Company that was then owned by the Gibson Corporation. When Gibson decided to move their mandolin manufacturing to Nashville, Bruce and a few other employees went to Nashville to set up operation but missed Montana enough to move back without jobs. With the help of some former Flatiron employees, Bruce began manufacturing Weber mandolins.

Employee (and champion bluegrass picker) John Lowell gave us a tour of the shop, which is in a two-story red



Specialized hand work, like the installation of bracing (top) is performed by individual luthiers. Mandolins at various stages of construction (above) await the next step toward completion (left).

brick schoolhouse in Logan, Montana, in the Gallatin Valley. The shop is about 8,000 square feet with plenty of natural “big sky” sunlight streaming through the many 10-foot-high windows.

The main work area of the shop appears to be the former gymnasium: there’s a stage at the end of the room filled with weight machines and other exercise equipment. Along one wall are shelves going up about 12 feet filled with vast supplies of spruce, mahogany and maple boards where they age in the consistent low humidity of Montana.

Many of the instrument parts are rough-cut ahead of time to ensure that any warping or checking will be noticed before the building process begins.

Much of the rough milling, about 70 percent, along with logo carving, is done by a computer-controlled carver; the rest is done by hand.

A conversation with a musician about an instrument often leads to further innovations based on their feedback. Among Weber's innovations are a new style of bridge that uses ebony wedges rather than the traditional brass screws to adjust string tension. The ebony wedges make adjustments a bit easier and provide a more solid tone from the strings. Another unique feature of Weber instruments is the use of mortise-and-tenon neck joints rather than a dovetail joint.

When Sound to Earth developed a line of resonator guitars, John says they went against the traditional design and came up with a new system they call a "carousel" soundwell. The open soundwell, which holds the resonator, is created with two wooden rings supported by eight posts. This design increases the flow of air and sound.

A lacquer finish on Weber instruments helps to improve the tonal quality as the instrument ages. Find out more at www.soundtoearth.com.

— Joe Fahey



Challenging Chairs

"Something Special"

The "Challenge of the Chair" was the theme for the 15th annual woodworking competition at the Wharton Esherick Museum in Paoli, Pennsylvania. Why chairs? To do something special for the 15th juried show, said curator Paul Eisenhower: "They're probably the hardest things for furniture makers to make."

Mitch Ryerson's "Matisse" chairs (above left) and Daniel Shawn Turley's "Growth" (above) were part of the chair challenge show.

Shop Talk continues on page 26 ...

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Cherry is in both Ric Allison's "Lipstick Chair" at left and Michael Brolly's "Altar Chair" at right. David Ebner's "Brookhaven Chair," above left, is figured mahogany, and Donald Moss's "Christmas Tree Chair" (above, right) includes reclaimed spruce, fir and balsam.

From 68 entries of side chairs made mainly of wood, 10 were selected — on the basis of creativity, craftsmanship and functionality — to be part of the exhibition. Among those wood selections were the choices for Donald Moss's "Christmas Tree Chair": the fir, balsam and spruce came from discarded Christmas trees. "Chairs," said Eisenhower, "are the ultimate challenge."

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Chippendale-styled Shaker Candlestand

The author's beautiful candlestand is a reproduction of a Union Village original.

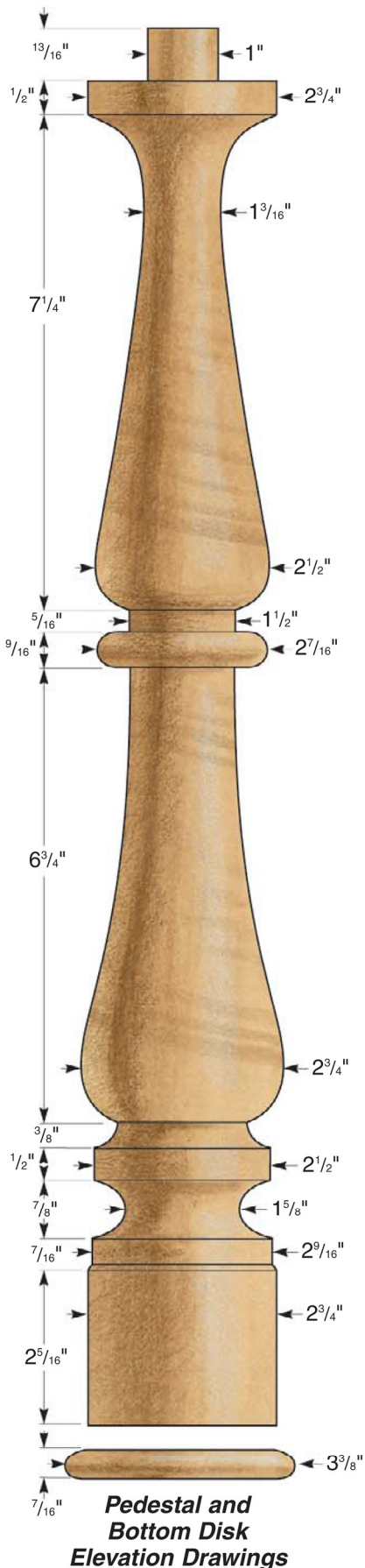
By Kerry Pierce

The term Shaker is sometimes seen as denoting a furniture period, like Queen Anne or Chippendale, but although Shaker furniture making is a genre built to a set of aesthetic principles identifiably different than those of other genres of furniture making, the Shaker genre is not based, even loosely, on an historical period.

Shaker furniture making existed outside American furniture periods, running sometimes concurrently with them, sometimes trailing well after the fact. Nevertheless, like the country furniture tradition in which it is most deeply rooted, Shaker furniture making drew deeply from the high-style period furniture made in the American urban centers, borrowing forms and design motifs, translating them in the light of the Shaker aesthetic.

Shaker tables, for example, often exhibit straight leg tapers much like Hepplewhite tables of the late 18th century, but unlike those high-style models, Shaker tables with tapered legs were nearly always simple and plain. Similarly, this little Shaker candlestand — a reproduction of one from the Union Village community near Lebanon, Ohio, — borrows heavily from high-style Chippendale tables of the 18th century. Like those Chippendale predecessors, this stand features three graceful cabriole legs leading to





Before beginning any new piece of furniture, the author makes a set of story sticks. This piece required two such sticks. One is a pattern for the cabriole leg profile, and the other is the stick shown above, on which the elements of the turned pedestal have been marked off.



This simple marking gauge allows the author to draw marks on a turned spindle that are perfectly parallel to its axis of rotation. To mark the locations of the leg mortises, he stops the lathe's rotation by engaging the locking pin on its indexing head. He then slides the jig (pencil point pressing lightly against the object) along the bed to scribe a straight line.

a turned pedestal that supports a top surrounded by a shallow turned lip. But this somewhat stripped-down and "Shakerized" version offers only a smattering of the turned and carved detail characteristic of the American Chippendale examples from which it evolved.

Turning the Pedestal

The pedestal consists of a succession of turned beads, coves and vases. After roughing in the cylinder, I marked these elements by transferring them from a story stick (see top photo for details), then created the beads with a skew chisel and the coves with a 3/8" fingernail

gouge. I added a 1"-diameter, 13/16"-long tenon at the top of the pedestal, which you'll later fit into a mortise drilled into the bottom of the top support and the top itself.

The vertical centerline of each of the three legs is exactly 120 degrees apart from the other two. These distances are most easily located through the use of an indexing head. An indexing head is a disk centered on the lathe's axis of rotation with a number of equally spaced stop holes drilled near its circumference. It is a truly helpful feature now found on most lathes. My lathe has 36 holes, so the distance between two adjacent holes is exactly 10 degrees.



The cabriole legs on the original candlestand have slightly crowned bevels on either side of their top edges. The author created these bevels with a spokeshave and a rasp, as shown above, after first freehanding some guidelines with a pencil.



Square tenon shoulders won't mate tightly with a rounded pedestal. To create a tighter fit, the author bevels the areas underneath the shoulders. Here, he's marking these areas.



With a wide chisel, create the bevels that will lie under the leg shoulders. These bring the shoulder up tight against the pedestal base. Pare carefully to your layout lines, checking the fit periodically.

To mark the 120-degree segments on the base of the pedestal, I engaged the indexing head's spring-loaded locking pin, drew a line with the marking gauge shown in the bottom photo, previous page, and marked the centerline of one of the pedestal's legs. I then counted off 12 stops on my indexing head, engaged the locking pin, and marked the second centerline. I repeated this to locate the centerline of the third leg. I also added marks on the base of the pedestal halfway between each of these centerlines. These extra marks allowed me to later create lines on the bottom of the pedestal that form the centerlines of each mortise on the bottom of the pedestal.

You can achieve the same thing by connecting the bottom of the centerline of each leg mortise and the mark left by the tailstock center. I added the extra marks because sometimes in cleaning up the bottom of the pedestal, I obliterate the tailstock's center mark.

Making and Installing the Legs

I clamped the pedestal to my bench top using a series of U-blocks and the clamps, some of which can be seen in middle and bottom photos on this page. Then I completed the mortise marking process.

The joinery on this pedestal stand is unlike any I've seen on other Shaker pedestal stands. Many of these pieces have sliding dovetails, while others have simple tenons with a shoulder on each side. Each leg of this particular pedestal stand, however, has only one shoulder on the right side of a fat tenon.

I chopped out the mortises with a 1/2" mortise chisel and a wide paring chisel. I then turned my attention to the legs.

In profile, these legs are much like the legs on many Chippendale-era pedestal stands. They don't, however, exhibit the carving typical of the Chippendale examples. The only elaboration on the band saw leg form is a slightly crowned bevel on the top outside edges of each leg.

Single-shoulder tenons set these legs apart from other typical Shaker pedestal stands.

I began work on these bevels by free-handing penciled guidelines to indicate the limits of the bevels. I created the bevels with a spoke-shave, a rasp and sandpaper. I roughed in the one-shouldered tenons with a backsaw, hand-planing each to final thickness one shaving at a time.

Many years ago, when I first began to build tripod tables, I undercut the shoulders on the leg tenons in order to get a tight fit of shoulder against the round base of the pedestal. Otherwise, there will be a wide gap between the shoulder and that round base — which curves away from the shoulder. However, several years ago, I began to cut a narrow bevel on the base underneath the shoulder instead. This bevel allows the shoulder to fit snugly against the base.

Tips for Preparing the Top

I turned the top while it was mounted on a faceplate. First, after mounting the faceplate to what would eventually be the upper side of the top, I cleaned up the bottom surface of the top, turned the fillet under the lip on the top's edge, and then shaped — by scraping — the bottom half of the lip itself. I then removed the top from the lathe, took off the faceplate, and remounted it on the bottom side of the top to complete the lip turning and to dish out the excavation. This last process removed the material containing the screw holes made by the first mounting on the faceplate.

Note: After you've done your shaping on the bottom surface of the

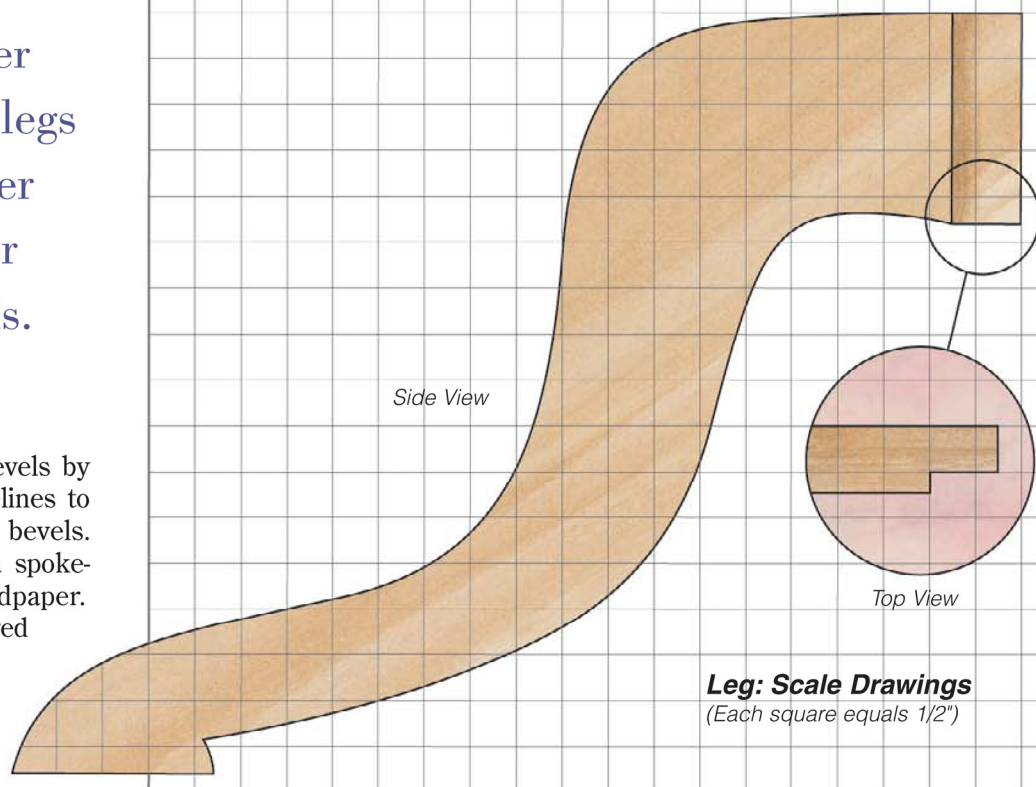
candlestand top, and before you remove the work from the lathe, use a pencil on your tool-rest to create a couple of concentric circles on the bottom of the candlestand top. These circles should be just a bit larger than the diameter of your faceplate. Then, after removing the faceplate from the upper side of the candlestand top, use these concentric circles to align the faceplate on the bottom of the candlestand top. When you're mounting the faceplate on the bottom side, it must center on the same axis of rotation you established with the faceplate on the upper side.

I actually made two tops for this candlestand. The first one, which I turned from a blank of kiln-dried 5/4

curly maple in one long session at the lathe, transformed itself into the buckled shape of a potato chip after one day in our heated home.

I took a more cautious approach to making the second top. First, I planed the 5/4 blank flat, removing perhaps a 1/4" of thickness, and placed it under the couch in our heated living room for a week. Next, I mounted it on my lathe and removed another 1/4" of thickness and gave it a second week under the couch. Then I reduced it to its final thickness, leaving it fatter than the first top. The combination of approaches — reducing the thickness in stages so I could turn away any deformation that occurred, and leaving a greater final thickness — resulted in a more stable top. But I know that nothing can completely prevent an unsupported top like this one from curling a bit over time.

A slow lathe speed is very important when turning an object with a diameter as large as the top of this candlestand. That's because the rim speed — the speed at which the work passes the tool — is determined not only by the lathe's rpm, but also by the diameter of the object mounted in the lathe. For example,

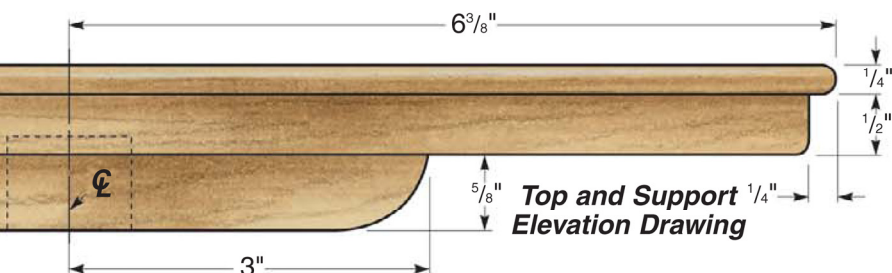


Leg: Scale Drawings
(Each square equals 1/2")

“Nothing can completely prevent an unsupported top like this one from curling a bit over time.”



The author uses a shop-made beam compass to draw the outside diameter of the candlestand top. Instead of bringing this blank to final thickness right away, he recommends planing and flattening the top in stages to help minimize warping.



an object two inches in diameter mounted in a lathe with a speed of 400 rpm will have a rim speed of 209.4 feet per minute. A 12-inch object spinning at 400 rpm will have a rim speed of an astonishing 1256.6 feet per minute, almost six times as fast. And that speed has real consequences at the work/tool interface. A careless move with a gouge that might be a minor event at 200 feet per minute could be disastrous at 1,200 feet per minute.

That's why I'm going to make two recommendations in regard to turning the top. First, turn that top at the slowest possible speed. A speed of 100 rpm would not be too slow. Second, unless you're a great technician at the lathe, use a timid approach to turning the outside edge where the speed is greatest.

I'm not a great technician on the lathe, so I embrace the timid

approach. Although I use tools that cut when I'm spindle turning, when I'm turning the outside diameter of something mounted on a faceplate, I simply scrape — very carefully — until I've rounded the entire outside diameter. Then I shape it by pushing little nibbles with the tip of my skew until I've created the shape I want. It's not an elegant technique, but it works, and I've never had an accident when turning on a faceplate.

The actual excavation of the top's interior I achieved with a spindle gouge I've reshaped so that most of its tip is ground to a bevel. I then feed the tool to the work, from the center out, so only one short section of the radius on the end of that ground tip is in contact with the work at any one time. As you see in the bottom photo (above), it gives me long shavings and solid control.



Use the point of your skew to push thin layers of material across the outside diameter of the candlestand top, working from right to left (top photo). This passive style of turning simplifies — and makes safer — the process of working a surface spinning past a tool at high rim speed. The author uses a spindle gouge reground with a long tip to hollow out the excavation inside the lip that surrounds the top (bottom photo).

Finishing Touches

There's a 6"-diameter support under the candlestand top that I turned on a faceplate. I then attached the top support to the underside of the top using four 1 1/4" #8 drywall screws. I aligned the grain on this support so that it was perpendicular to the grain direction in the top itself. That provides a small bit of resistance to the top's inclination to curl across the grain. I then bored the 1"-diameter hole that receives the tenon at the top of the pedestal.

Finally, there is a small disk with a radiused edge on the bottom of the pedestal. I made the radius with a carving gouge and a rasp, although I could have turned it on the lathe like the other pedestal components.

Give the project a final sanding, add finish, and you'll have an elegant candlestand that wears its blended styling and traditions proudly.

Kerry Pierce is a master craftsman and author of many woodworking books who lives in Lancaster, Ohio.

Book-matching on the Band Saw

By George Vondrisk

Add a level of beauty and sophistication to your panels by following the advice of this master woodworker.



Look behind the center spread for a great band saw technique.

Nowhere is the versatility of the band saw more on display than when creating beautiful resawn and book-matched panels. Our author takes you through every step of the process and reveals a very cool “preview” technique along the way.

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Resawing Book-matched Panels

Creating a beautiful book-matched panel is easy, once you know a few simple tricks of the trade.



Get started by installing a wide resaw blade on your band saw, making certain the tracking and tension are correctly set. Next, check that the blade and table are perfectly perpendicular, as shown at right.

At its essence, creating a book-match means resawing through the thickness of a board. Once the cut is complete and you've opened the two pieces, like a book, the grain on each of the two cut faces will almost perfectly mirror one another.

I've used book-matched panels on a number of projects. On a small scale, they make great jewelry box lids, but if you own a saw with enough resaw capacity you can create book-matches on a larger scale. I've produced book-matched door panels, for instance, and used them on adjacent doors, so each is the mirror of the other. It's a striking effect. I've also created tabletops from book-matched pieces.

The band saw is just the tool for resawing a book-match. You'll need a resaw fence and, with a few simple setup tips, you'll be cutting like a pro.



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You can use a mirror, held against the edge of your board, to get an idea of what the book-match will look like after you've made the resaw cut. This will give you visual confirmation that you've selected the right board or section of the board for your application.

Setting Up the Saw

Before you start cutting, the first thing to do is make sure your band saw is properly set up for resawing. If you plan on cutting fairly wide boards, you'll need a saw with plenty of capacity.

The general rule with resawing is, "the wider the blade, the better." I prefer a blade that's at least 1/2" wide. The blade you select should also have an aggressive tooth pattern with no more than 3 or 4 teeth per inch (tpi). With your blade installed, you'll want to check the blade tension and tracking and confirm that the table is perfectly perpendicular to the blade, as shown in the two photos at left.

Reflecting on the Book-match

Selecting your stock is the next step, and when you're book-matching, there's a nice little "preview" trick you can try. Want to see what the book-match will actually look like before you ever make a cut? Hold a mirror at the edge of the candidate board, as shown above, and you'll see the mirror image of the face grain. This gives you a very good idea of what your book-match will look like after resawing.



Make a line down the center of the board. An adjustable square or marking gauge works great for this task.



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Position the single-point fence so it's about 1/4" in front of the blade and the blade is centered on your pencil line. Clamp the fence in place and double-check the setup.

Marking Your Cut

Now that your saw is all set and you've used the mirror trick to select a board that will best show off your book-matching efforts, it's time to move on to the cut and split your board into two pieces. Before you actually start cutting, use a small combination square to help you draw a line down the center of your board, as shown in the photo at left.

Setting the Fence

I like using a single-point fence for my resawing operations. This type of fence (shown above) allows a woodworker to make slight corrections for blade drift during the cut — adjustments that would be impossible with a regular fence.

Set the fence on the band saw table and hold the board you intend to resaw against the fence. The "point" of the fence should be 1/4" in front of the blade so the board contacts the fence before the blade. Next, use the line you marked on the edge of your board to set the distance from the blade to the fence. Clamp the fence in place with your line centered on the blade.



Resaw the board by holding it tight to your point fence with a push pad as shown in the photo above. Carefully follow the line you made on the edge of the board earlier.

As you near the end of the cut (right photo) move your hands beyond the blade and, still using the push pad, pull the board through the end of the cut. This is safer than pushing when you're close to the blade.



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Making the Cut

Resaw the board by holding it against the fence and gently pushing it into the band saw blade, as shown in the top right photo, previous page. I recommend using a push pad, instead of your hand, to hold the board tight to the fence. Gently guide the board so the blade remains centered on the pencil line throughout the cut. As you near the end of the board, you should switch your hand positions to pull the board past the blade instead of pushing it, as shown in the photo, left. This keeps your hands well clear of the cutting path of the blade.

Assembling and Finishing the Bookmatch

If you'll be using your book-matched pieces as one wide panel, you'll need to glue them together, as shown in the top photo, this page. If the assembled panel will be wider than your planer, plane off the band saw marks before gluing the panel together. Carefully joint the soon-to-be-glued edges so you have a nice, nearly invisible seam.

With a little finish, your book-match will really "pop." Many people will look at it and wonder how you created such a beautiful mirror image.

Send the resawn boards through a planer to remove the blade marks, then joint the edges and glue the pieces together to create your perfect book-match. It's a dramatic addition to any woodworking project.



www.jettools.com/TSC

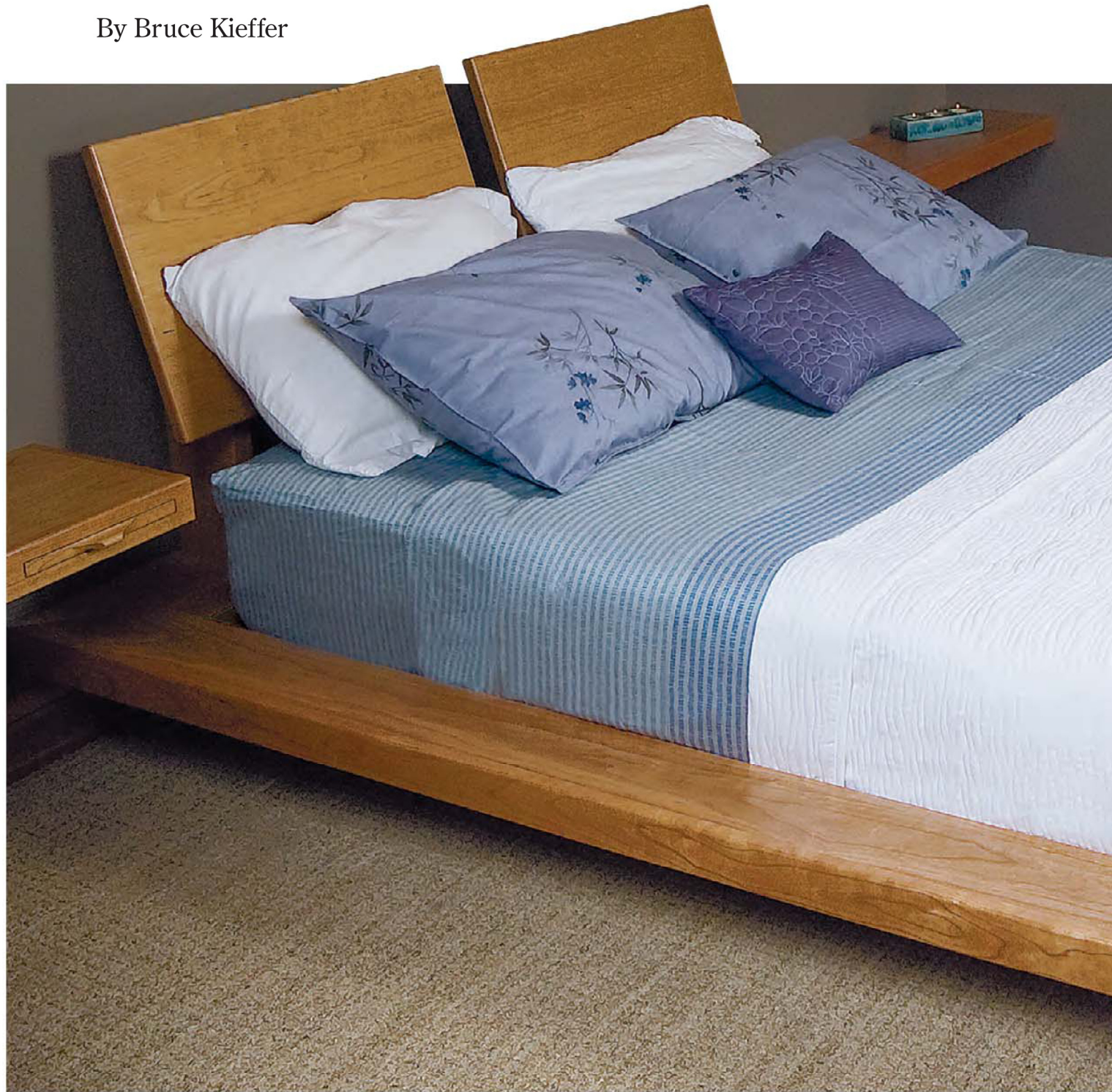
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Platform Bed

By Bruce Kieffer



Getting from where my clients and I started, to arriving at this design, was a long process, but it was worth the effort. Initially, my clients knew they wanted a bed that looked like it was floating with a framed ledge all around. They showed me magazine and catalog images of beds with elements they liked. I knew what they

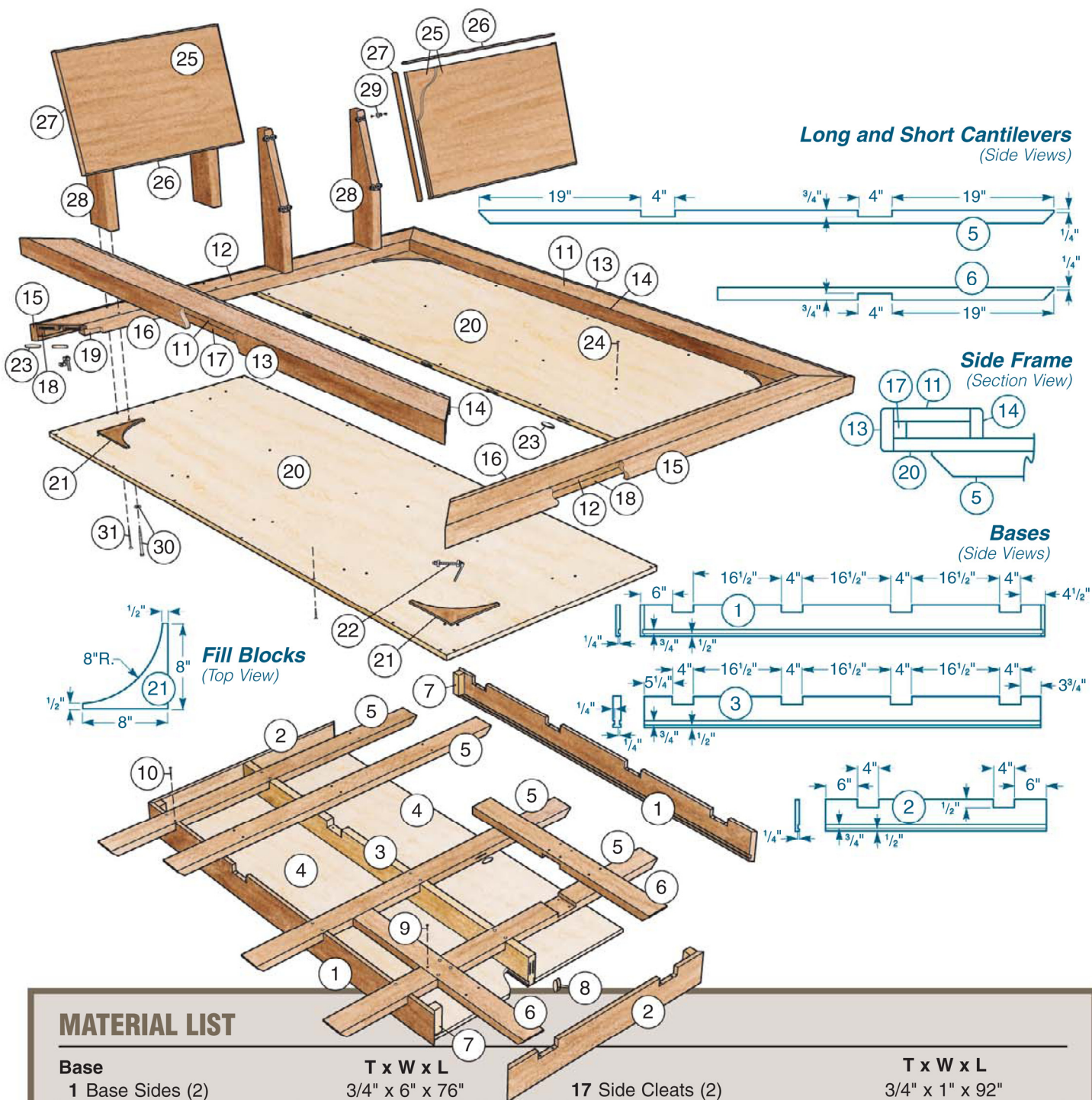
wanted, but I didn't know how to do it. So, it was off to my computer to start designing. After many revisions in which I progressively moved the legs, and then a base, farther and farther inward, it finally hit me: a cantilever supported frame was the perfect solution. My clients were ecstatic, and I was off to the races.



“Getting the mitered corners of the platform frame joined tight and constructing the base are a bit more challenging than they appear — simple things often are.”

The cherry lumber I used looks rich, which is good — it's not inexpensive. It will darken with time and become even better-looking. My clients wanted the base made out of cherry, too, which added to the cost. You could save money by using a cherry-stained wood (birch or poplar) for the base, as it's not very visible.

**A floating bed?
Not really!
A cantilevered
design fools the eye.**



MATERIAL LIST

Base

	T x W x L
1 Base Sides (2)	3/4" x 6" x 76"
2 Base Ends (2)	3/4" x 6" x 41 1/2"
3 Base Support (1)	1 1/2" x 6" x 74 1/2"
4 Plywood Panels (2)	3/4" x 19 3/4" x 75"
5 Long Cantilevers (4)	1 1/2" x 4" x 67 1/2"
6 Short Cantilevers (2)	1 1/2" x 4" x 39 1/2"
7 Corner Blocks (4)	1 1/2" x 1 1/2" x 4 3/4"
8 Biscuits (6)	#20
9 Flathead Screws (8)	#8 x 1 1/4"
10 Flathead Screws (28)	#8 x 2 1/2"

Platform

11 Frame Sides (2)	3/4" x 4 1/2" x 92"
12 Frame Ends (2)	3/4" x 4 1/2" x 72"
13 Outer Side Edging (2)	3/4" x 2 1/2" x 93 1/2"
14 Inner Side Edging (2)	3/4" x 1 3/4" x 83"
15 Outer End Edging (2)	3/4" x 2 1/2" x 73 1/2"
16 Inner End Edging (2)	3/4" x 1 3/4" x 63"

	T x W x L
17 Side Cleats (2)	3/4" x 1" x 92"
18 End Cleats (2)	3/4" x 1" x 72"

19 Headboard Cleat (1)	1 1/2" x 1" x 61 1/2"
20 Plywood Panels (2)	3/4" x 36" x 92"
21 Fill Blocks (4)	1/4" x 8" x 8"
22 FastCap FlipBolts (4)	1/4" x 3 1/2"
23 Biscuits (15)	#20
24 Flathead Screws (74)	#8 x 1 1/4"

Headboards

25 Plywood Panels (4)	1/2" x 16 1/2" x 27"
26 Top/Bottom Edging (4)	1/4" x 1" x 27 1/2"
27 End Edging (4)	1/4" x 1" x 17"
28 Supports (4)	1 1/2" x 5 1/2" x 21 1/2"
29 Desktop Fasteners (16)	3/4" x 1 5/16"
30 Lag Bolts, Washers (4)	3/8" Dia. x 5"
31 Flathead Screws (4)	#14 x 4"

Customize Your Design

Build the Project to Fit Your Mattress

The dimensions given in the *Material List* on the facing page are for making a bed using a 10"-thick queen-size mattress without a box spring. There's a 3/4" space all around between the mattress and platform frame. I suggest you spend a little money, and a little time, confirming the fit using your mattress and bedding. Adjust the dimensions to suit your needs. You can do that by making a crude test frame using 1x2s. Start large and slowly trim and make your test frame smaller until you get the size you want. You may also need to adjust the size and shape of the fill blocks (pieces 21).

Construction Notes

Don't be lulled into thinking that this is an entirely easy piece to build just because it looks simple. Getting the mitered corners of the platform frame joined tight and constructing the base are a bit more challenging than they appear — simple things often are.

All the exposed edges of the platform and headboards are rounded over with a 1/4" radius. Only the corners of the base need be rounded over. The mitered corners of the frame are aligned flush with #20 biscuits, and they're joined with FlipBolt fasteners made by FastCap® (www.fastcap.com; 888-443-3748). A routing template is available for the FlipBolts, and you'll need it to rout the hardware recesses correctly.

Laying out the holes in the platform plywood (pieces 20) was a lot of work. I did it on my computer, and a



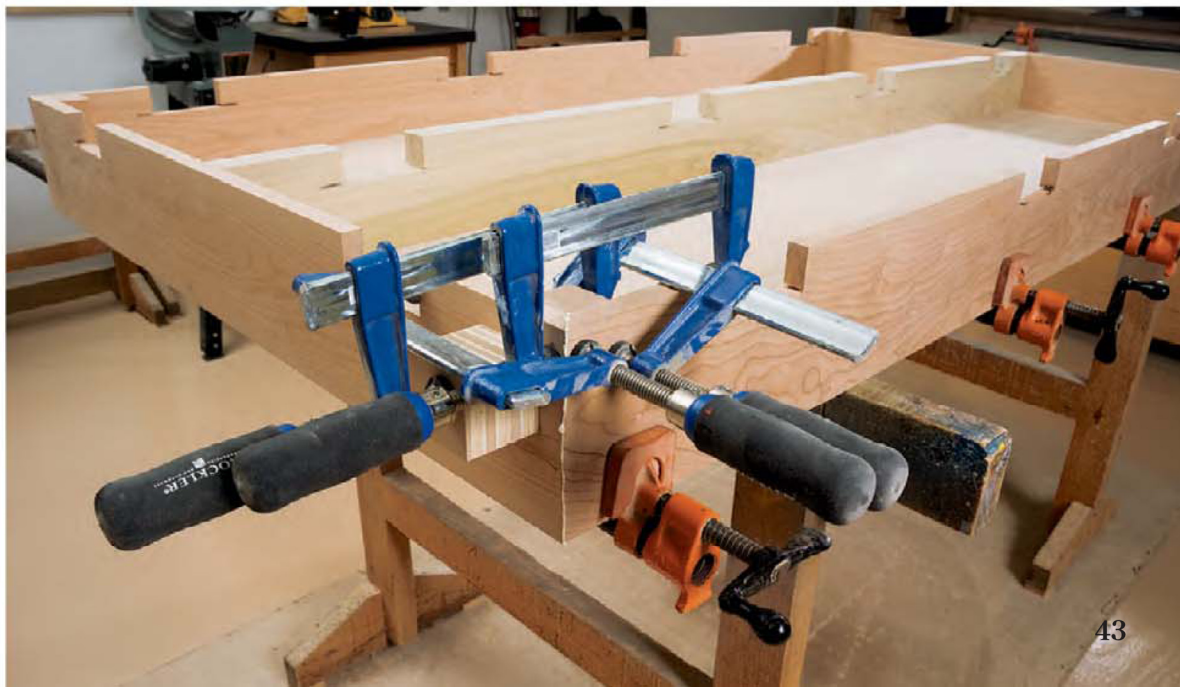
Half-lap joints are used where the base's foot-end cantilevers overlap. I cut these using my radial arm saw and a dado blade. A similar table saw setup would work fine.

drawing is included on page 45. There are 82 holes to drill! About half of them are countersunk from one side, and the rest from the other side. And to confuse matters even more, the two plywood pieces are mirrored images of each other when the drilling is done. Follow the layout, and you'll be fine.

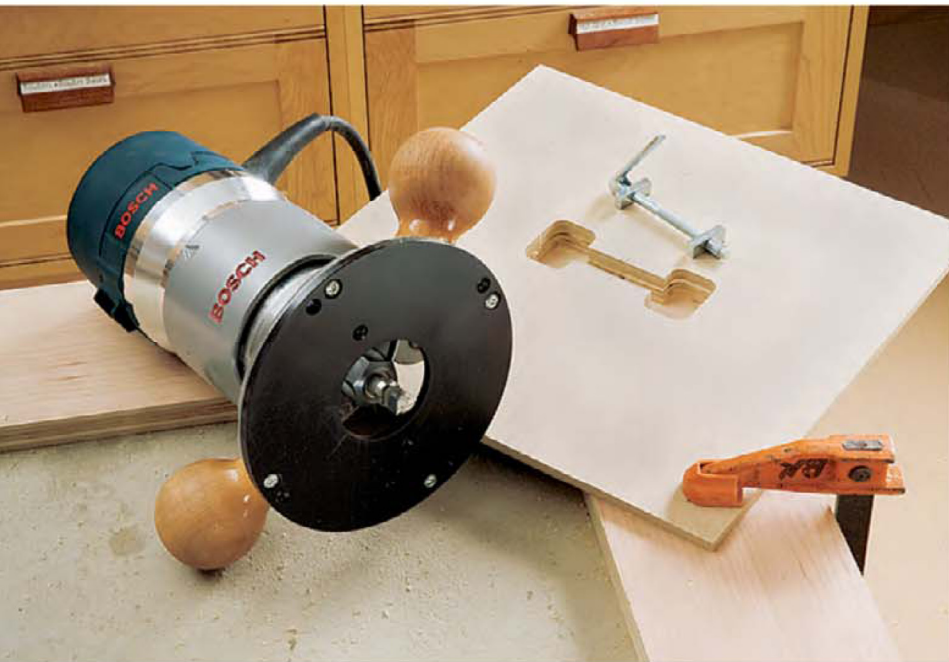
Making the Base

Cut the base parts (pieces 1 through 7) to size. Lay out and cut the half-lap joints of the base's foot-end cantilevers (one piece 5, both pieces 6). See the *Drawing* at left for more information. Use a table saw or miter saw to cut the beveled ends of the cantilevers. Cut the grooves for the biscuits that join the short cantilevers and the second-from-the-end long cantilever.

Glue and clamp the base sides to the partially assembled base. Before carrying out the actual glue-up, make sure you know how you will place your clamps to ensure the mitered corners are tight.



The Base and Platform



Rout the cavities for the FlipBolt frame corner connectors. Butt the mitered ends of the frame plywood together, and clamp the routing template in place so it's centered on the miter joint.

Assembling the Base

First glue and clamp one base end to the center support piece. Glue and clamp one of the plywood panels to the assembly, then add the other plywood panel. Next, add the other base end. Now, all that's left is to add the base sides. Here's where it gets a bit tricky. My band clamps were not long enough to clamp the mitered corners, so I used the corner blocks (pieces 7) as clamping blocks instead. Do a dry fit to figure out your clamping setup before you go further, and then glue and clamp one base side at a time to the assembly.

Round over the base corners. Lay out and drill the cantilever-to-cantilever half-lap screw holes, and the cantilever-to-base screw holes. Align the cantilevers to the base and drill pilot holes for the assembly screws. Install all the base assembly screws. Set the assembled base aside for now.

Building the Platform

The 6"-wide frame sections are built up (three pieces per frame section) slightly long, and then mitered to their finished lengths. Be very careful when you cut the mitered ends. You could easily goof up the ends by not cutting the miters perfectly at 45°. Test your machining setups thoroughly on scrap wood before proceeding. My 10" miter saw was too small to cut the mitered ends, so I used my table saw with a sliding table attachment. I trimmed a little bit at a time until

Lay out and cut the notches in the base sides and base end for the cantilevers. There are various ways to make these cutouts, but given the size of the parts, I suggest you use a router jig and router with a flush-trim bit. Rough-cut the openings with a jigsaw, rout the shape and square up the corners with a hand file.

Cut the grooves for the plywood in the base sides, ends and support. Make the width of the groove match the thickness of your plywood. Machine the grooves for the biscuits that join the support and base ends. Carefully cut mitered corners on the base sides and ends.

Dry-fit (no glue) the base together to make sure the plywood is not so large as to prevent the base's mitered corners from closing tightly. You'll also want to confirm that the cantilevers seat properly in their notches. Make any necessary adjustments, and then finish-sand the exposed surfaces of the base sides and ends before proceeding.

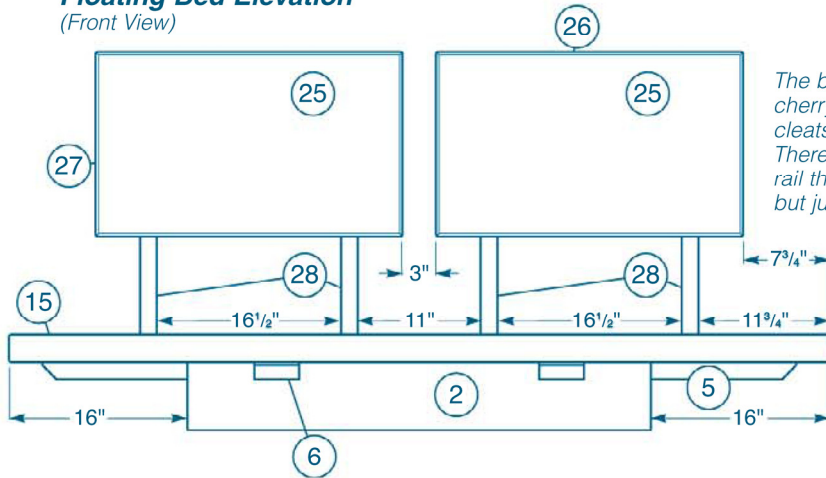
clamping blocks instead. Do a dry fit to figure out your clamping setup before you go further, and then glue and clamp one base side at a time to the assembly.



Drill the counterbore holes for the desktop fasteners in the headboard supports. A 3/4"-diameter Forstner bit works well for this task. Drill the hole depths so the fasteners seat flush.

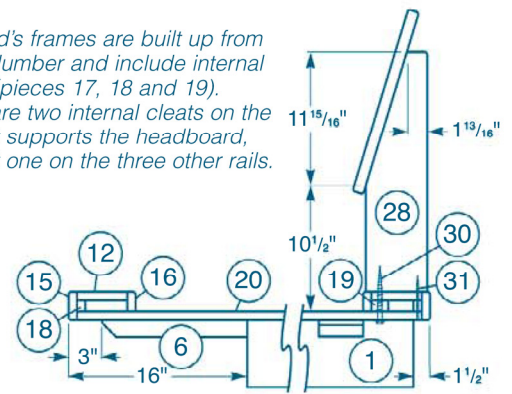
Floating Bed Elevation

(Front View)



Floating Bed Elevation

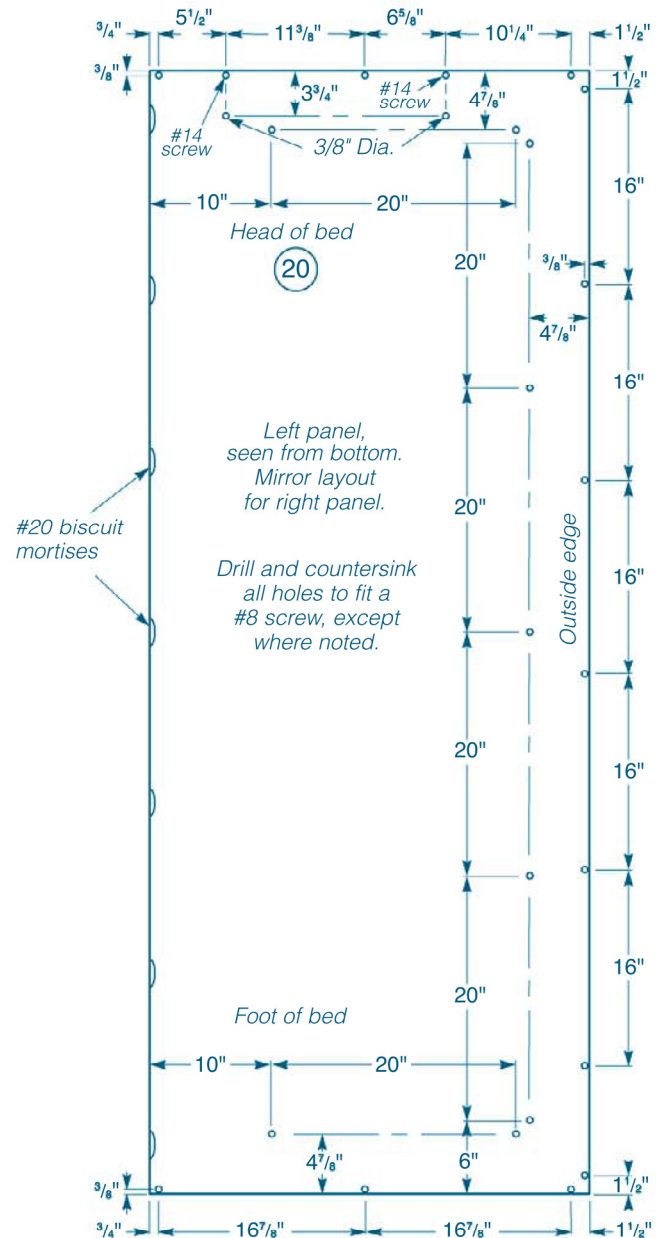
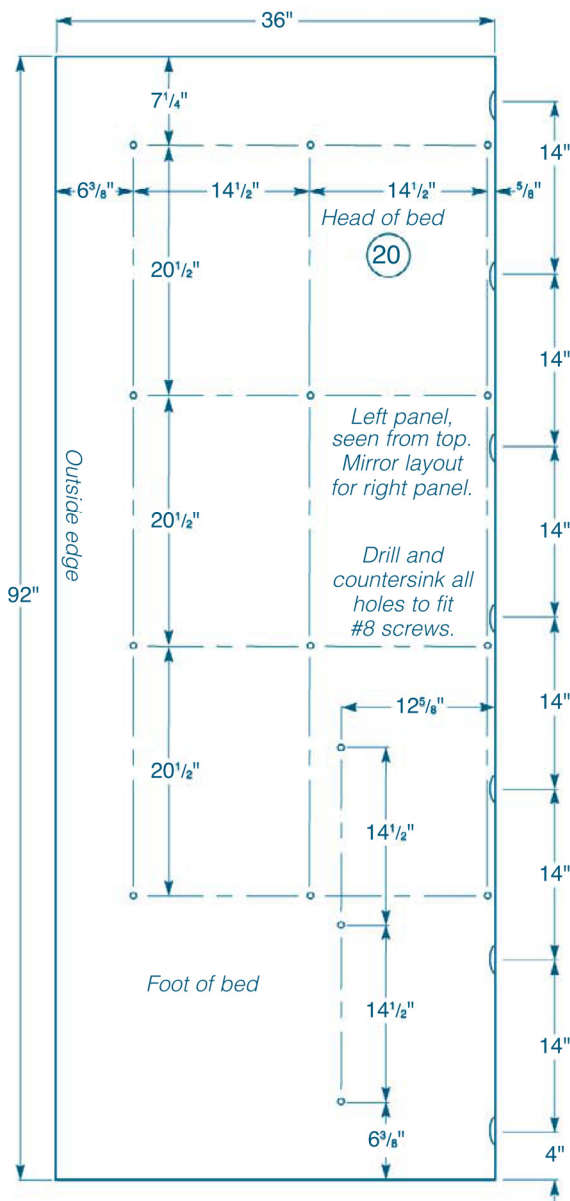
(Side View)



Left Plywood Panel

(Top and Bottom Views)

The drawings below locate all the screw and bolt holes. You will need to work from both faces of the plywood to achieve an accurate mark-up. The right panel is a mirror of the left.



Bringing it All Together



Laminate the plywood pieces together to make the headboards. Use a roller to spread the glue, and then stack and clamp the pieces using scrap plywood cauls to spread the pressure. The final step is to add the edging (see photo directly above).

Assembling the Bed: Despite its large size, there is some very



Set all the cantilevers in place, and then align and screw them to the base. When you're done, lean the base against a wall, out of the way.



Assemble the frame upside down on the floor. Slide some cardboard underneath the corners so carpet fibers don't get caught in the joint when the FlipBolts are tightened.



A “floating” platform conceals this bed’s solid foundation.

the finished lengths were perfect. Before making the cuts, I placed a 3/4" spacer under the shorter inside edging piece to bring its height up equal to the outside edging. That way I could make the cuts face-up to reduce tearout.

Cut the frame pieces 11 through 18 to size plus 1/4" longer. Miter the ends, but leave the pieces long. Rout the 1/2"-deep FlipBolt cavities in the ends of the frame plywood pieces 11 and 12. Use the manufacturer's template and a short-top bearing flush-trim bit or a template guide bushing and straight bit for the routing. Glue and clamp the frame edging pieces to the frame plywood pieces. Make the headboard cleat (piece 19), attach all the cleats, and miter-cut the ends to final size as described earlier. Assemble the frame upside down on your floor.

Cut the plywood (pieces 20) to fit in the assembled frame. Mark the plywood faces up/down, right/left, head/foot, and outside edge as shown in the *Drawings*. Lay out and drill the screw holes and cut the biscuit grooves as shown in the drawing on page 45. Screw the plywood pieces to the frame and round over the bottom edges. Next, you can flip the platform over, and set it on sawhorses. Round over the top edges and corners. Drill the lag bolt and #14 screw clearance holes through the frame at the head.

Make the fill blocks (pieces 21) now, but don't attach them to the platform plywood (using double-stick carpet tape) until you carry out the final bed assembly.

Constructing the Headboards

Make the headboard supports (pieces 28). Drill the desktop fastener counterbore holes (pieces 29) and rout the rounded-over edges.

Cut the headboard plywood (pieces 25) from one sheet so the grain flows smoothly across the headboard faces when the bed is assembled. Leave the plywood pieces about 1" wider and 1" longer than their finished dimensions, and laminate them together to make the two 1"-thick panels. That way, you don't have to worry if they slip slightly out of alignment during glue-up. When the glue cures, cut the panels to their finished size, and add the edging (pieces 26 and 27). Miter-cut the edging to hide the end grain. Rout the rounded-over edges.

Wrap up construction by aligning and fastening the headboard supports to the platform. Attach the headboards to their supports. Use a 10 1/2"-wide spacer to align the headboards parallel to the platform.

Finishing Up

Disassemble the bed, finish-sand the parts and ease any sharp edges. I used Danish Oil Finish as a topcoat, then added nail-in nylon feet to the bottom edge of the base. While this “floating” bed doesn't really defy the laws of gravity, the effect is convincing. A solid platform will keep it firmly grounded for years to come.

Bruce Kieffer is a professional woodworker and a frequent contributor to Woodworker's Journal.

precise woodworking that has to fall into place during the assembly process.



Set the platform plywood pieces in the frame. Place spacers under the joint between sheets to keep the edges from sagging. Then screw the plywood to the frame and lean the platform against a wall.



Set the platform on the base so initially it overhangs the head end of the base about 8 inches. Align and attach the headboard supports. Align and screw the platform to the base, and then attach the headboards.

Some Really Cherry Wood

By Rob Johnstone, with Tim Knight

*As American as 1776, **black cherry** lumber is one of our most coveted furniture-grade hardwoods. But is it truly first-rate stock or a species that, as some argue, should be shunned and ignored?*

Cherry lumber has been one of my favorite kinds of wood ever since I first smelled it being machined in my father's cabinet shop. Its pungent and distinctively fruity smell is just one of the pleasures that accompanies the working of this durable and beautiful hardwood. Cherry, in my mind, is nearly the perfect hardwood for furniture and cabinetry.

Its natural color is rich but not too dark. It is a "Goldilocks" wood in terms of its hardness — that is to say, not too hard (like hickory) and not too soft (like poplar or alder) — in other words, it is just right. It machines easily, glues up well and, when first treated with a coat of linseed oil to help pop the grain, it looks spectacular with just a clear finish applied.

I am, in fact, such a fan of this wood that I am flabbergasted that some woodworkers shun cherry as a second-rate species. They don't like the fact that cherry darkens over time as it is exposed to light. Some folks



Black cherry trees are not only a wonderful lumber species, but are beautiful to look at as they grow — making them a lovely addition to yards and gardens across their native range.





While perfectly at home in very modern projects, like Bruce Kieffer's bed (found on page 40), cherry lumber was also a favorite species for Colonial furniture makers.

don't like the characteristic black pitch pockets and tiny pin knots that are allowed in top quality cherry lumber. The most common complaint is that cherry burns easily as it is ripped, routed and shaped.

Beautiful Flaws

My response to these naysayers is that, with the notable exception of the burning characteristic, the beauty of cherry lumber is actually created by the combination of all of its quirks and qualities. The pitch pockets and pin knots add detail and texture to the figure of the wood. The darkening over time adds a richness to the patina of the wood that is entirely pleasing to my aesthetics.

And cherry is not a one-act wood. Naturally growing cherry produces a variety of figure and grain patterns that give woodworkers an array of options to choose from. Curly figured cherry is not uncommon and combines the best qualities of curly maple and the hues of cherry. Quartersawn cherry presents a more subdued overall figure — a lovely, subtle “silk” pattern that runs across the width of the boards. Flatsawn cherry, one of the few flatsawn lumbers I like to recommend, has pin knots and pitch pockets to add a dimension of texture that lifts it out of the plain-jane category.

I am not alone in my high regard of cherry lumber. Our Colonial fathers often used cherry as a furniture wood. Many wonderful antiques that show off the beauty of old-growth cherry still exist, testifying to its popularity and durability. And, in an example of “that which is old is new again,” cherry lumber's use in kitchen cabinetry has become very popular in recent years. That is good news for us home woodworkers, as the supply of cherry veneer-covered sheetstock is readily accessible. You can even request the veneer figure you desire — quarter-sawn or plain-sliced, for example — to avoid the rolled-veneer look often common in hardwood plywood. You would likely need to go to a lumberyard that works regularly with cabinet shops to find it, but it will be well worth the effort.



©istockphoto.com/illustrations

Prunus serotina

Black cherry has been a premium furniture wood in the United States since Colonial times. It was widely used in the 17th and 18th centuries by fine furniture makers of North America, and that use continues today. It is relatively easy to work, is stable after drying and holds a finish very well. The heartwood of black cherry is reddish brown, while the sapwood is nearly white and is fairly narrow in older trees. Cherry is difficult to stain well but will darken to a rich reddish color with age and exposure to light. The heartwood is resistant to decay.

Black cherry is the only native cherry of value for furniture-grade wood in the United States. Its common name originates from the black color of its small ripe fruit. It occurs generally from along the U.S. and Canadian border south to central Florida and west to the edge of the Great Plains. Large trees of higher quality are somewhat restricted to the Allegheny Plateau of Pennsylvania, New York and West Virginia, although individual quality trees occur throughout the Appalachians and the upper Gulf Coastal Plain. Rarely, it will grow up to 100 feet tall and 3 to 4 feet in diameter.

Black cherry is not tolerant to shade, so thrives in clear-cut and other areas where the overstory has been removed. As the stand ages, other hardwoods will crowd it out and, after about 80 years, its growth slows or stops. Many of them will die. Due to these characteristics, cherry grows best under even-aged management.

Black cherry fruit is an important part of the diet of many birds and animals. Curiously, the leaves and twigs are high in prunasin, a cyanide precursor. Cattle have gotten sick and died from ingesting wilted black cherry leaves and twigs. However, white-tail deer show little reaction to eating the twigs and leaves.

Although the United States does not have an unlimited supply of black cherry, it is widely grown and managed. It is not in danger of eventual rarity, and the supply is sustainable. For this reason, it is a preferred wood for use by those who desire high quality wood grown under “sustainable forestry” techniques.

*T.C. Knight, Silviculturist,
Oden, Arkansas*



Fold-down Outfeed Table

By Chris Marshall



A small-shop delight, this project is a sweet upgrade to your shop's centerpiece.

Many new cabinet saws have a side extension table, and they're a big help for supporting wide sheet materials or long workpieces when crosscutting. But I use a table saw even more often for ripping lumber. No cabinet saws that I'm aware of provide a means of support *behind* the saw where I really need it. I've tried using a worktable back there, but it's just one more fixture to get in the way in a small shop, and, I've never found a roller stand that provides the amount of stability I want.

So, my solution was to build an outfeed table that I can flip

up when I need it and fold down when I don't. It mounts to the saw's back fence rail and sets up with an extendable leg that props against the cabinet. Ordinary barrel-bolt hardware locks it quickly in the "up" position, so I never have to futz with the setting. It provides a 30"-deep platform behind the machine — plenty of room to keep long rip cuts from tipping off into the netherworld — and its triangulated design is sturdy as can be. After five years of hard use, the prototype for the fold-down table you see here has become an essential feature on my cabinet saw.

are suitable for a saw with 26" of vertical clearance between the tabletop and the dust port. Make sure to adjust your table's front-to-back size, if needed, so it won't interfere with the dust port when you fold it down. I made my table stretch from one extension wing to the other. You could make yours even wider if you like, but remember that the leg should be relatively centered underneath for stability. I suggest widening the leg to broaden its stance if you make a substantially wider outfeed table.

Cover both faces of the table's core with sheets of plastic laminate. Use spacers to align the laminate and pull them out one at a time. Be sure to roll the surfaces thoroughly to bond the cement.

Tailoring the Table to Your Saw

If you decide to build one for your saw, first grab a tape measure and size up your machine. The parts in the *Material List* on page 53

Building the Table

Get this project rolling by cutting the MDF table core top and bottom (pieces 1 and 2) to size and gluing them together. Drive a brad through each corner to keep the pieces from shifting during clamping. It's essential that the edges line up evenly.

Pull out your contact cement, J-roller and spacers so you can cover the top and bottom of the core with plastic laminate (pieces 3 and 4).







Plow a pair of 3/4"-wide dadoes across the filler strip to accommodate the table's leg pivot brackets. Set the width of these dadoes carefully so they provide a snug, friction fit for the brackets.

Start with oversized sheets, and bring them to final size with a trim router and piloted laminate cutter.

A filler strip (piece 5), machined with two small dadoes, tucks into place along the front bottom edge of the table core. The dadoes create pockets for the leg pivot brackets (pieces 6). Make the pivot brackets first, rounding their ends and drilling the centered 5/16"-diameter bolt holes. Then, use the brackets to set the width of the dadoes in the filler piece so you'll arrive at a nice, snug fit. Glue and screw the pivot brackets into their dadoes, then attach the filler strip to the core with more glue and screws (see *Drawings*).

I wrapped hardwood edging all around the table. It helps protect the edges of the MDF and laminate.

Another important feature is that the back ends of the side edging (pieces 7) are also shaped and drilled to form "pivot hinges." Here's the best order for completing and installing the edging: First create the side edging (see *Drawings*), then fashion the table pivot brackets (pieces 10) so you can round the ends and drill the through-bolt holes in all four pivoting parts at the same time. Make the table pivot brackets about a quarter inch longer than necessary, and set them aside.

Now, glue, clamp and nail the side edging to the core with 1½" brads. Mark and cut the front edging (piece 8) to length, then glue and nail it in place. Fit a strip of back edging (piece 9) to the side edging, and install it. Take the time to round its ends on a disc sander so the corners won't become "gut busters"



Fasten the pivoting leg braces to the leg's back panel, then glue and screw the beveled guide strips inside this leg housing.

later on. Wrap up by cutting the table pivot brackets to final length, gluing and screwing them in place to beef up the pivot points. Ease all the sharp edges of the trim with a 1/8" roundover bit, a file or a block plane.

Making the Leg

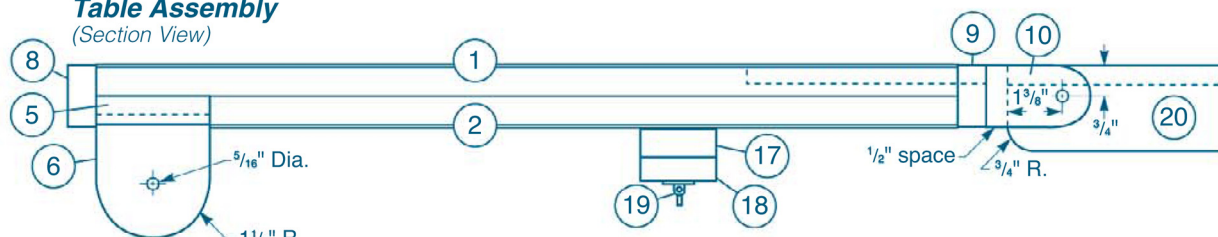
When I designed my original outfeed table, I wanted the leg to extend and brace against the saw cabinet but also retract so it could tuck behind the table when folded down. As you can see in the *Drawings* and photos, a telescoping leg provided the functionality I needed. The body of the leg houses an extension piece, and the parts open and close by what amounts to a giant sliding dovetail.

Assemble the leg by gluing and screwing the two side braces (pieces 12) to the back (piece 11). Since the braces must pivot on the top ends, first round them over on your band saw, and step to the drill press to bore centered bolt holes. Attach the braces to the back panel so the



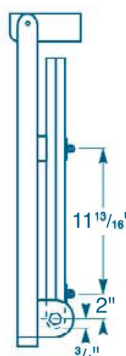
Wrap the table with hardwood edging, starting with the side pieces (pieces 7), then the front and finally the back. Secure with glue and pairs of 1½" brad nails spaced approximately every 6". Complete the edging by gluing and screwing the table pivot brackets to the side edging.

Table Assembly (Section View)

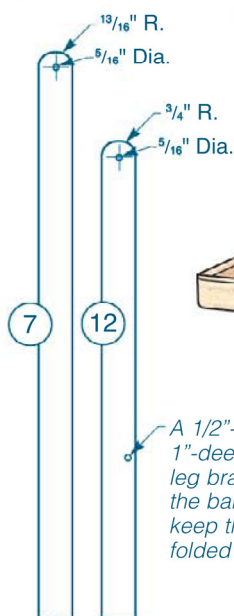


Two barrel bolts serve three purposes. The bolt underneath the table prevents the leg from swinging uncontrolled as the table is tipped up or down. The one on the leg keeps it retracted or extended for use.

Table and Leg Closed (Side View)

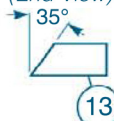


Side Edging and Braces (Side Views)



A 1/2"-diameter, 1"-deep hole in the leg brace receives the barrel bolt to keep the leg folded closed.

Guide Strip (End View)



Filler Strip (Front View)



MATERIAL LIST

	T x W x L		T x W x L
1 Table Core, Top (1)	3/4" x 22 3/4" x 42 1/2"	13 Guide Strips (2)	3/4" x 1 3/4" x 20 1/2"
2 Table Core, Bottom (1)	3/4" x 19 3/4" x 42 1/2"	14 Extension (1)	3/4" x 6 9/16" x 22"
3 Laminate, Top (1)	1/16" x 22 3/4" x 42 1/2"	15 Handle (1)	3/4" x 1" x 5 3/8"
4 Laminate, Bottom (1)	1/16" x 19 3/4" x 42 1/2"	16 Bolts, Washers, Nuts (2)	5/16" x 2" (Nylon lock nuts)
5 Filler Strip (1)	3/4" x 3" x 42 1/2"	17 Spacer (1)	3/4" x 2" x 15 3/8"
6 Leg Pivot Brackets (2)	3/4" x 3" x 3 1/4"	18 Build-up Strip (1)	5/8" x 2" x 4 1/2"
7 Side Edging (2)	3/4" x 1 5/8" x 26 1/4"	19 Barrel Bolts (2)	6" Steel
8 Front Edging (1)	3/4" x 1 5/8" x 44"	20 Mounting Plate (1)	2 1/4" x 5 3/4" x 40 3/4"
9 Back Edging (1)	3/4" x 1 5/8" x 42 1/2"	21 Lag Screws, Washers (5)	5/16" x 2"
10 Table Pivot Brackets (2)	3/4" x 1 5/8" x 2 3/4"	22 Lag Screws, Washers (2)	5/16" x 5"
11 Leg Back Panel (1)	3/4" x 9" x 20 1/2"	23 Leg Stop, Back (1)	3/4" x 2" x 16"
12 Braces (2)	3/4" x 1 1/2" x 22"	24 Leg Stop, Bottom (1)	3/4" x 1 1/2" x 16"

* Adjust the thickness to suit your saw.



Mark centerpoints for long pivot screws on the ends of the mounting plate using a brad-point bit tapped through the table pivot holes. Hold the plate and table apart with a couple of 1/2" spacers.



Clamp and then bolt the mounting plate to the saw's fence rail with five 2" lag screws and washers. Keep these fasteners well clear of the miter slots you'll need to rout later.



The leg stops here: it's simply a wooden ledge fastened to the saw cabinet with three short carriage bolts set into counterbored holes.

bottom ends of the three parts are flush. Next come the guide strips (pieces 13). Tilt your table saw blade to 35°, bevel-rip the strips to shape and cut them to length. Glue them inside the leg housing with the bevels facing inward. Drive countersunk screws through the back and into the strips to reinforce these important load-bearing joints.

Cut the leg extension (piece 14) to width and length, and bevel-rip both of its edges at 35° so it fits well between the guide strips. Aim for a slightly tight squeeze at first, then shave the bevels with a block plane until the extension slides smoothly into the leg housing. Glue and screw a handle (piece 15) to the extension. Now, close up the leg, and fasten a barrel bolt (piece 19) near the handle: the "male" side mounts to the leg extension, and the "female" receiver piece goes on the guide strip. When the table is folded down, this bolt keeps the leg retracted.

Attach the leg to the table pivots with bolts, washers and nylon lock nuts (pieces 16). Next, cut the spacer and build-up strip (pieces 17 and 18) to shape, and fasten them together with one pair of their ends flush. They serve as a mount for a second male barrel bolt — it locks the leg against the table and prevents it from swinging loose when folded down. Slip the spacer between the leg and table and position it 8" in from the back edging. Screw the spacer to the table and the barrel bolt to the build-up strip. Slide the bolt over against the leg brace, and give it a good rap with a hammer to mark the bolt's location. Drill a 1/2"-diameter, 1"-deep hole here to allow the bolt to slide fully into the leg and secure it.

Mounting the Table to the Saw

Time to get this project mounted up! Laminate a thick blank of lumber together to form the mounting plate (piece 20) that attaches to the saw's fence rail. Plane it down so the top face will be about 1/16" below the saw table when it's attached to the fence rail. Ease the front bottom

Hang the outfeed table from the mounting plate with two 5/16" x 5" lag screws and washers.



Use a pair of clamps to pinch the leg parts together and hold the table up. Check your table's setting with a long straightedge, and adjust the leg a little at a time until you arrive at a nice, flush platform.

edge of the plate with a 3/4"-diameter roundover bit to create swing clearance for the table. You may also need to knock a little off the bottom back edge so the plate fits snugly against the fence rail.

Sand all the table's wooden parts and the mounting plate up through the grits, and apply a couple of coats of wipe-on finish before proceeding.

When the finish cures, flip the mounting plate and the table face-down on a flat surface, and set the parts together. Slip a couple of 1/2"-



Screw the second metal receiver next to the first barrel bolt to set the open length of the leg. The top receiver keeps the leg retracted.

thick spacers in between. Poke a 5/16" brad-point bit into each table pivot hole, and tap it with a hammer to mark the ends of the mounting plate for pivot screw holes. Drill the 1/4"-diameter pilot holes 3 1/2" deep and as straight as you can.

Bolt the plate to the metal fence rail with five lag screws and washers

The author used a long slotted routing jig, a rub collar on his plunge router and a 3/4"-diameter straight bit to mill a pair of miter slots into the outfeed table.



(pieces 21) spaced evenly along its length. Keep these screws clear of the table saw's miter slot locations.

With the mounting plate in place, make up the leg's wooden stop "ledge" by gluing and screwing pieces 23 and 24 together. Attach it to your saw cabinet with three short carriage bolts, washers and locknuts. (I know, I know ... this is a lot of holes to put in your trusty saw, but it's worth it!) I positioned the leg stop assembly so the bottom face of piece 24 is 12 5/8" up from the floor.

Fasten the table assembly to the mounting plate with a couple of 5" lag screws and washers (pieces 22).

Final Fine-tuning and Routing

Grab a helper to give you a hand in setting up the table with the leg extended and propped against the stop. Mark and trim the bottom corners of the leg extension so it nests completely against the leg stop. Then use two clamps to hold the leg extension and housing at the correct length (see photo above). Adjust and re-clamp the leg parts as needed until

the outfeed table is flush with the saw table. Extend the first barrel bolt and slip the remaining metal receiver piece over it. Screw the receiver to the guide strip to finalize the leg's "up and open" position.

I made a long, slotted jig and used a 1" O.D. rub collar and 3/4" straight bit to extend my saw's miter slots over into the outfeed table. A couple of stops limited these cuts and kept my bit from tangling with the saw's granite table. I chiseled away the waste where the bit couldn't reach.

Wipe finish into the miter slots, and you're *really* ready to rip! Best of all, those long rip cuts will never be a seesaw operation again!

Chris Marshall is Woodworker's Journal's field editor.



Outfitting Your Small Shop

By Sandor Nagyszalanczy

Setting up shop can be big fun. How do you do it and not spend big money at the same time? Benchtop tools may just be the answer.

You've been thinking about getting into woodworking for some time, and now that your stock trading hobby isn't much fun anymore, it's time to clear an area in your garage, shed or barn and start gearing up to make some sawdust! But there's so much equipment in a modern woodshop, where do you begin? One practical approach is to start with the big stuff and fill in the smaller stuff later: Acquire the power tools first, then buy hand tools, sharpening gear, vises and clamps, etc., little by little as needed or as your budget allows.

Because most neophyte woodworkers start out with small shop spaces, this article will focus on choosing compact benchtop power tools. Although they were once considered underpowered toys, the newest generation of benchtop machines offers excellent performance and capacity at an affordable price tag. Not only are these machines capable of creating some serious sawdust, they're light and small enough to be practical for "convertible" shop spaces that must serve as car garages or garden sheds when they're not used for woodworking.

Today's Shop continues on page 58 ...



Sandor's Short List

These eight tools will form the heart of a sweet small woodworking shop.

- | | | |
|-------------|--------------------|--------------------------|
| 1 Table saw | 4 Thickness planer | 7 Combo belt/disc sander |
| 2 Jointer | 5 Router table | 8 Power Miter Saw |
| 3 Band saw | 6 Drill press | |



“Acquire the power tools first, then buy hand tools, sharpening gear, vises and clamps, etc., little by little as needed or as your budget allows.”

The full complement of benchtop tools I'd recommend for building cabinets and furniture and for tackling home improvement wood projects includes a table saw, jointer, band saw, thickness planer, router table, drill press and combination belt/disc sander. I'd also include a power miter saw (it does overlap with the table saw just a bit, so consider it an optional tool if you wish). Let's look at each of these machines individually and examine what it can — and cannot — do, as well as explore a few suggestions for setting up benchtop tools in your shop.

Table Saw: Heart of the Shop

The centerpiece of woodworking shops both large and small, a good table saw lets you do a vast array of straight-edged cuts to tackle all manner of wood projects, from utility shelves to tables and chairs to



For accurate mitering and crosscutting, the author recommends upgrading your saw with an aftermarket miter gauge with long fence and flip-down stops.

kitchen cabinets. Although I usually recommend a 10" contractor's saw for its power and capacity, the majority of benchtop saws also sport 10" blades and are more portable and stowable, making them a great choice for shop-real-estate-challenged woodworkers. Most benchtop models offer the same depth of cut as contractors' saws and a decent 24" rip capacity, although their universal motors (the kind found in portable power tools) are noisier and less torquey. To save your back from lifting and

carrying drudgery, look for a benchtop saw that features an integrated folding stand, like the Bosch 4100 or Ridgid TS2410LS (see the lead photo on the previous page). Folding stands make it easy to pivot the saw from a vertical storage position to a horizontal position, ready to go to work. Wheels on the stand let you roll the saw where you need it — to the site of the job or perhaps out onto the driveway, when it's a nice sunny day.

To get the most out of a benchtop saw, make sure it's fitted with a sharp, high quality, thin-kerf blade, which takes less power to run than a standard-kerf blade. If you often use the saw for crosscutting chores, consider buying an aftermarket miter gauge (see photo, above). Its long fence helps you cut longer stock more safely, and flip stops allow you to easily cut multiple parts to the same length.

Jointer for Straight Edges

A serious cabinet and furniture maker might say that a table saw

Today's Shop continues on page 60 ...

Although not as robust as a full-size floor model jointer, this benchtop version is a truly handy tool. Putting a straight edge on a piece of stock before cutting or shaping it is essential in many machining situations.



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“... and now that your stock trading hobby isn't much fun anymore, it's time to clear an area in your garage, shed or barn and start gearing up to make some sawdust!.”

without a jointer is like an iPod without earphones — your lumber has to have a straight edge to go against the saw's rip fence or miter gauge for safe, accurate cuts. A sharp hand plane will do the job, if you have the skill and patience to use it, but a jointer makes quick work straightening edges, as well as flattening cupped boards in preparation for thickness planing. A stand-mounted cast-iron jointer with a 6" cutterhead and long tables is the standard for a small shop, but it takes up space. There is currently only one benchtop jointer on the market: the variable-speed 6" Delta JT160 (see bottom photo on previous page). While it doesn't have



Sometimes you just don't want to cut a straight line. Here, the author uses a benchtop band saw that can cut delicate scroll work or slice through 3½" stock — and many tasks in between. While it can't handle really heavy-duty work, it can be a small-shop workhorse.

the power or table size to handle heavy, long stock, I've found it perfectly adequate for light edging or surfacing duties with shorter lumber commonly used for small projects. If you have heavier, longer boards to joint, you can switch to a router table (see page 62).

Band Saw for Cutting Curves

If curved woodwork is your thing, a band saw is an important purchase. For cutting out smallish-size curved parts, scrollwork and light resawing duties, benchtop band saws with 9"- to 10"-diameter wheels work well. Models including the Skil 3385-01 (photo above) accept

blades up to 3/8" wide and can cut wood up to 3½" thick. Fitted with a narrower (1/8") blade, a small band saw can cut curves down to a 1/4" radius, so it can do many of the same cuts you'd do on a scrollsaw. If a compact band saw's throat depth isn't deep enough for cutting large panels or long/wide stock, you can always switch to a portable jigsaw. Just don't expect a small band saw to handle heavy cuts, such as sawing logs into turning blanks or resawing wide hardwood boards into veneers; step up to a 14" or 15" cast-iron band saw for these kinds of jobs.

Drill Press for Holes and More

You can drill holes in wood with any portable drill, but when you need straight, true holes, it's hard to get along without a drill press. A benchtop drill press takes up very little space, yet it performs most of the hole-boring tasks that a larger, more expensive floor model does. Most 10" to 12" benchtop models sport 1/2"-capacity chucks, 5 amp (or large-



A true “woodworker's” drill press, this Ryobi model has adjustable drilling speeds “on the fly” and a round table. Add to that the advantage of laser hole centering, and the machine becomes the whole package for a small-shop craftsman.

Today's Shop continues on page 62 ...



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"Few woodworking power tools are as useful as a router."



Bench Dog's cast-iron topped router table is the top of the line when it comes to under-the-table mounted router woodworking. Or remove the router to do a variety of tasks as a handheld tool.

er) motors, and they offer three inches of quill travel, enough for all but the deepest holes. Simpler drill presses have stepped pulleys and belts that allow speed changes. More advanced models, like the Ryobi DP121L, (bottom photo, previous page) feature mechanical variable speed — handy for quickly matching motor rpm to the size of the bit and the application. For example, a quicker speed yields cleaner results when boring softer materials with a small-diameter bit. Some benchtop drill presses accept mortising chisel attachments, allowing you to "drill" square holes for joinery or decoration.

Router, in a Table or Handheld

Few woodworking power tools are as useful as a router. But you'll get even more out of this versatile machine if you mount it in a router table. A good table's large surface, sturdy fence and slot-guided accessories (miter gauge, coping sled, etc.) allow a router to perform as a mini shaper or, fitted with a straight bit and offset fence faces, even as a jointer for straight-edging long boards. As a bonus, you can always remove a router from its

table and stand or base cabinet, like the Bench Dog ProMax. A big router table not only offers better support when routing large panels and heavy boards, but it also can serve as an ample outfeed table for a table saw or other benchtop tool (see the photo, below left). A router table's cabinet base also offers useful storage for bits, tools and accessories.

Planer for Thicknessing

At some point in your woodworking, you'll no longer settle for building with pre-surfaced lumber that comes in standard thicknesses (3/4", 8/4, etc.). A portable thickness planer quickly turns rough planks into smooth boards that are just the right thickness for your project. Among the many planers to choose from, my favorite portables offer 13" width capacity that can handle wide stock and glued-up panels. I prefer planer models that feature reversible blades that are easy to change when dull and three-knife cutterheads, which yield more cuts per inch (for a smoother overall cut).

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A cabinet-style router table can be used for storage, a work table and also as an outfeed table for your table saw. Small-shop owners need to allocate their floor space carefully as they outfit their shops.

table (photo above) to use it freehand. (Hint: buy a router kit with two bases and leave one mounted in the table). A benchtop router table, like the Bosch RA1181, is light and easy to store, making it great for a cramped workspace. But if you have the room, buy a larger router

“At some point in your woodworking, you’ll no longer settle for building with pre-surfaced lumber that comes in standard thicknesses.”

I like the two-speed feature of the DeWalt DW735, which reduces tearout when planing woods with figured or problem grain (knots, interlocked grain, etc.). To ready it for use, I like to mount a planer on a low utility table, as shown in the photo below, rather than setting it on the floor (too low) or on a benchtop (too high).

Power Miter Saws, for Crosscuts

A table saw and miter gauge can handle many wood crosscutting

chores. But if your projects often call for long stock or trim that’s cut to precise length, consider adding a dedicated crosscut saw to your shop. Compound miter saws and sliding-compound miter saws cut with the workpiece stationary (as opposed to the table saw), allowing safe, accurate cuts on even the heaviest and longest parts. Either type of saw makes short work of not only square cuts, but also miters, bevels and compound angle cuts, all set with minimal effort. The majority of powered miter saws sport either a 10"- or 12"-diameter blade. Sliding saws offer the greatest crosscutting capacity — up to 12" for 90° cuts. If you rarely cut stock that wide, consider a pint-sized compound miter saw, like the Craftsman 21195 or 21180. This small, affordable saw (photo next page) uses economical 7¼" blades, yet it can crosscut construction 2x4s and tackle compound cuts in frame members, trim and moldings up to 3½" wide and 1½" thick.

Combination Belt & Disc Sanders

A great complement to portable power sanders — belt sanders, random-orbit sanders, finish sanders, etc. — a benchtop combination (combo) sander doesn’t take up much room, but it handles lots of different wood sanding chores. A combo model, like the Skil 3375-01 (see photo, following page), features a 4"-wide, 36"-long belt and a 6" disc. The horizontally running belt is great for flattening the bottom of a bowl or box, or for shaping small parts freehand. The belt’s roller end is very handy for smoothing concave, curved surfaces. The disc sander’s adjustable table and miter gauge allow you to accurately smooth part ends and edges, and the table tilts for sanding beveled parts. Just make sure to hook up your combo sander to a shop vacuum before putting wood to abrasive, lest you end up with a snoot full of fine dust.

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A benchtop planer is a great addition to a small or large shop. The tool allows woodworkers to mill rough lumber and thickness stock to suit their project design. The author sets his planer on a low utility table to present it at a proper work height.

Painting Support

Magnetic Paintbrush Holder

Designed to clip to the rim of any size of can, this ABS paintbrush holder has integral magnets to securely hold a brush ferrule, allowing liquids to flow from the bristles back into the can. Includes a metal tab for opening cans.

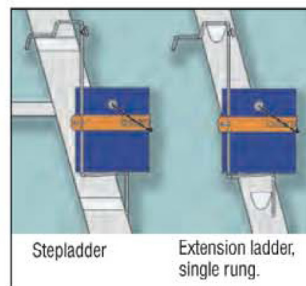
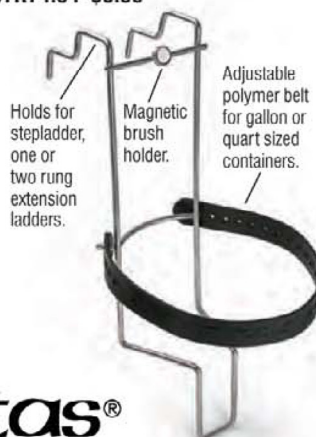
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Michelangelo Paint Can Holder

Made from galvanized steel rod, this paint can holder fits all current North American stepladders 6' or taller, as well as all D-rung ladders. The mono polymer belt can accommodate quart or gallon cans. An integral magnet keeps a brush over the open can so you always have a hand free to grip the ladder. Patent pending.

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A power miter saw, also known as a chop saw, makes quick work of cutting long stock down to size, forming accurate miters and making repetitive cuts. While a table saw can cut miters, this saw can be set up for specific tasks and be a timesaving addition to a small shop.

Shop Vacuum — for More Than Just Cleanup

In a small shop filled with benchtop tools, a shop vacuum is an absolute necessity. Yes, of course, you can use it to clean up floors and benches, but more importantly, having a vac connected keeps chips and fine dust liberally churned out by benchtop machines at bay. Collection of sawdust not only saves your lungs, but it also actually reduces the dulling of blades, bits and abrasives.

When choosing a shop vacuum, buy the one with the largest capacity drum you can live with, especially if you'll use it with a thickness planer. Large chips quickly fill up a vacuum's drum, and the bigger the drum, the less often you'll need to empty it. Models with 2"-diameter flexible hoses are least likely to clog and are the easiest to connect to the majority of benchtop tools. Use an adapter fitting to mate hoses to ports of a different size.



The author recommends a combination belt and disk sander as an essential benchtop tool for a small woodworking shop. Few projects will leave your shop without touching a power sander.

"The B&D Workmate® is a particularly handy tool stand. Its built-in clamps hold small machines steady, and when you're done working, the Workmate folds flat."

Setting up Benchtop Tools

One thing that makes benchtop tools a great choice for small shop woodworkers is how compact, light and portable they are. You can use them when you need them, then store them out of the way when you're



Portable workstands are one key to a versatile small shop space. They can be set up for a variety of tasks, then folded up and put away.

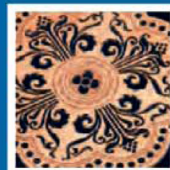
done. Smaller benchtops fit on a shelf, under a bench or in a cabinet when not in use, then clamp atop a workbench, tool stand or utility table for operation. The B&D Workmate® is a particularly handy tool stand. Its built-in clamps hold small machines steady, and when you're done working, the Workmate folds flat. If you have the space to mount several machines on a single worktable, make sure they won't interfere with each other during use. To make heavy tool bases or large stationary machines easier to move, fit them with locking casters or mount them on mobile bases.



Sandor Nagyszalanczy is a writer/photographer and regular contributor to Woodworker's Journal. His book "Setting up Shop" is available at rockler.com.



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Cool New Tools for 2009

by Chris Marshall

More granite options, tricked-out saws and some handy fastening tools are just a few of the new offerings unveiled at recent trade shows. This could be your year to update the shop!

If you're toughing out another cold winter and waiting patiently for those spring projects, I'll bet you could use some light at the end of the tunnel. Me, too. Seems like the perfect time to get jazzed about new tools, so let me brighten your day. After sizing up the latest products at recent trade shows, I've got some great stuff to share!

So, find an easy chair, take a close look at these goodies and start

thinking about all things sharp and shiny again. After all, spring is just around the bend, folks. You'll be back in the shop in short sleeves before you know it, maybe even using some of these cool new toys.

Granite Keeps Rocking Our World

A couple of years ago, Steel City turned the cast-iron tool industry on its ear by switching to granite worksurfaces on some machines. Tombstone tops seemed like a radical idea at first. But, when you think about it, granite is perfect for our stationary tools. It never rusts or warps, it dampens vibration, and it offers a polished-smooth, durable surface. This year, the company is enhancing its granite jointer line. Now, in addition to a granite fence, the new 6" (model 40640; \$1,199.99) and 8" (model





Steel City Deluxe Granite Jointers

Granite fences and beds, plus indexed cutterheads, take jointing in a new direction on both the 6" model 40640 and 8" model 40660 machines. They sell for \$1,199.99 or \$1,649.99, respectively.

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40660; \$1,649.99) Deluxe Jointers also have granite beds. The smaller machine has 36" infeed and 30" outfeed beds with a 1½HP TEFC motor. Its bigger brother has 37" infeed and outfeed beds, with a 2HP motor. That's not all; both jointers also come with spiral carbide-insert cutterheads, so those knife-setting chores are finally over. Thumbs up! And, integral casters make the tools moveable. If you're planning on a new jointer, give these guys a close look.

Sooner or later, the virtues of granite were bound to catch on, and RIDGID is the next tool label to

offer it. Here, for your drooling pleasure, is RIDGID's R4511 10" Granite Top Table Saw. Available at a Home Depot near you in mid-January, this all-new saw features a 1¾"-thick slab of granite that provides 50 inches of ripping space. RIDGID equips the saw with a 1½ HP powerplant and a rise-and-fall riving knife/guard system that can be removed without

tools. It even has a built-in wheel base. At around \$599 street, this saw should pose stiff competition to other hybrid saws on the market. Looks like rock is becoming a mainstream tune.

Tool Preview continues on page 72 ...



There are lots of great new tools — both big and small — coming down the woodworking pipeline.



RIDGID R4511 10" Granite Top Table Saw

RIDGID is catching rock fever with its new 10" table saw. It features right tilt, a 1½HP TEFC motor, mobile base and, of course, a thick chunk of granite on top. \$599.
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Band Saws with Bigger Bites

Fourteen-inch band saws are smart choices for home shops. They're moderately priced and capable — except, of course, for big resawing. To resaw boards wider than 6", you need to add a riser block to the frame and crank up the blade tension to make the saw do what it's really not designed to do — until now. JET and General International have just released two band saws that fit the 14" category but offer *double* the resawing capacity — a full 12" — without risers! JET's approach with the new JWBS-14DXPRO (\$899.99) is to stretch and reinforce the cast-iron frame to take the place of a riser block. The saw has a beefier spring to handle the higher tension of blades up to 3/4" wide. For other amenities, you get a quick-release blade tensioner (very helpful!), ball-bearing blade guides and rack-and-pinion guard adjustment. This 1¼HP saw takes 105" blades — the same size made for 14" saws with riser blocks. So,

standard blades won't be hard to find from many sources.

General International's engineers doubled the resawing in a different way. They split the cast-iron frame on the new 90-200 M1 saw and inserted a column that cranks up and down, similar to a radial-arm saw. The adjustable spine allows the saw to accept standard 93½" blades for 6" resawing, 105" blades for 12" resawing, or any length in between. Just wind the frame up or down to suit it.

Like the JET, General's saw has a blade quick release, bearing guides, a rip fence and 4" dust port. Both saws run at two speeds for cutting wood or metal. But, the General has a larger table and a bigger 1½HP motor, plus a worklight. At press time you could put one of their units in your shop for \$1,459.



JET JWBS-14DXPRO

Big-saw resawing (12") in a small-saw package is what JET delivers with this new 14" band saw, plus a bunch of pro features for \$899.99. Say hello to book-matching and veneer!

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General International 90-200 M1

Here's a radial-arm-inspired 15" band saw with an adjustable frame that takes a range of blades and resaws wood up to 12" wide. It has a 16" x 16" table and 1½HP motor. Street price: \$1,459. www.general.ca • 888-949-1161

Totally Retooled Unisaw

Nearly 80 years ago, Delta Machinery rolled out the first Unisaw®. Building on that heritage, this year Delta presents a completely redesigned and updated Unisaw.

For starters, it's made and assembled entirely in the United States. How often do you see that anymore? A conspicuous difference on the new machine is that both the blade tilt and height adjustment wheels are mounted in front. The new layout sure makes it convenient to tilt the blade while watching the setting. Situated between the cranks is the bevel tilt scale. It has a large clock-style display, accurate to 1/2 degree, that's easy to read without parallax distortion.

Topside, the new Unisaw has a bigger 30" x 41" cast-iron table and,

look closely: there's a copious 15 inches of metal in front of the blade when it's raised to 1¼".

That means you can cross-cut wider workpieces or get those long and heavy boards started confidently when ripping. The saw has a tool-free riving knife and guard system that moves with the blade. Or, set the riving knife low for cutting dadoes or rabbets. A Biesemeyer fence is standard, with either 36" or 52" fence rails and a side support table. Both of the fence packages include a storage drawer with an internal divider.

Inside the cabinet, there's a hefty one-piece trunnion that tilts left, and you can choose between a 3- or 5HP Marathon motor. The saw also has a unique dual-draw 4" dust port to keep the innards clean. Top it all off with an arbor lock, a clever one-piece arbor nut/washer and 50-tooth blade, and it seems that Delta's new Unisaw (\$2,800 to \$3,100) will carry on the long-standing tradition proudly.



Delta 10" Unisaw

Delta opens a floodgate of new innovations and improvements with its American-made, redesigned Unisaw. Three- or 5HP models with 36" or 52" fence rails are available, selling for \$2,800 to \$3,100, depending on features. www.deltaportercable.com • 800-223-7278.

DeWalt's New TrackSaws Ride on Rails

There's no question that circular saws have their place in woodworking. But, just try to cut a straight line without running the saw against a straightedge. I sure can't! And, even a straightedge doesn't prevent kickback or reduce tearout on delicate veneered plywood.



DeWalt TrackSaws

Cordless (DWS520) or 28-volt Li-ion (DC351) TrackSaws promise splinter-free and dead-straight ripping or crosscutting in solid wood or sheet goods. Priced from \$499 to \$999. www.dewalt.com • 800-433-9258.

DeWalt addresses all three limitations with its new cordless (DWS520) and 28-volt lithium-ion cordless (DC351) TrackSaws (\$499 to \$999). The saws ride on an anti-

slip aluminum track to ensure arrow-straight cuts. These tracks come in 59" or 102" lengths with soft edges that meet the blade to help reduce tearout. Modified

quick clamps hold the track securely, when necessary. The saws function with a straight-plunging action, and that, coupled with variable speed and a 1 1/4"-diameter dust port, ensures precise, clean cuts. A riding knife keeps the blade kerf open when ripping solid wood. Both 6 1/2"-diameter saws cut material up to 2 1/8" thick at 90° or 1 5/8" at a 45° bevel. If you're in need of a portable saw with panel saw potential, these TrackSaws seem very promising.

New Breeds of Fastening Tools

Lithium-ion is taking cordless battery technology to new heights, and it's the perfect power-to-weight

Tool Preview continues on page 76 ...

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- R. Hanson — "I can't begin to tell you how pleased I am with Hydro-Sil... the first time in 25 years our electric bill was reduced... saved \$635, over 40%!"

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equation for an emerging category of compact 10.8-volt tools. I'm a real fan of the mini impact drivers and drill/drivers, so I'm impressed with Makita's new LCT203W Two-piece Combo Kit. You get an impact driver, a drill/driver with adjustable clutch, two batteries, charger and a rugged metal case — but, what really grabs me is the price: just \$179! For Makita quality, that's a steal.



Makita 10.8-Volt Combo Kit

A mini impact driver with 800 in.-lbs. of torque and a two-speed, adjustable clutch drill, plus two Li-ion batteries, charger and metal case for a miser's price of \$179.

www.makitatools.com • 800-462-5482

There's also a hot, new pin nailer on the market: Grex just introduced the P650 (\$439), which shoots pins from 3/8" to an astonishing 2" long! With this gun, you'd be all set for tacking glue joints, glass retainers, solid edge banding, moldings of all sorts or just about any application where a fine fastener is the only way to go. I became a pin nailer junkie a few years ago, and since then, I use them on most projects I build. If you haven't tried a pin nailer yet but plan to, keep this lime-green Grex near the top of your list. Then, I'll bet you'll get hooked, too.

Or, maybe you're into building cabinets and fastening with dowel joints. Freud's new Doweling Joiner (\$329) should make those jobs much easier. The 6.5-amp tool



Grex P650 Pin Nailer

Featuring a self-adjusting magazine, double-trigger safety, no-mar tip and rear exhaust, this nailer shoots 23-gauge nails from 3/8" to 2" long. Street price: \$439.

www.grexusa.com • 888-447-3926

functions similar to a biscuit joiner, but instead of a blade, it plunges a pair of 10mm-shank boring bits from 3/16" to 1/2" in diameter. They're spaced for standard 32mm shelf pin holes. The tool has a fully adjustable fence, index pins and depth control. Think of it: you could use the same



Freud Doweling Joiner

A portable doweling tool with a biscuit joiner's pedigree that bores pairs of holes spaced 32mm apart. Accepts 10mm-shank boring bits from 3/16" to 1/2" in diameter. Street price: \$329.

www.freudtools.com • 800-472-7307



Trend Airshield Pro

Give your lungs a breather with Trend's battery-powered, air-circulating face shield. It's suitable for fine wood dust and withstanding low-energy impacts. Street price: \$399. www.trend-usa.com • 270-872-4674



Better Faceshield, Smaller Cyclone

And finally, there are a couple of great improvements in the dust filtration and cleanup department. Trend has stepped up its fully protected air-circulating face shield with a new Airshield Pro model (\$399). They've repositioned the motor from the forehead area to the top of the helmet to improve its balance and comfort. The internal fan motor moves between 5.6 and 7 cubic feet per minute (cfm) of fresh air through the helmet's interior, and twin filters make it more than twice as efficient as the earlier Airshield Mk1 model at filtering out harmful dust. An eight-

hour NiMH battery should keep you breathing easy all day in the shop, whether you're routing MDF, sanding or working at the lathe. You can recharge the battery without removing it. The Airshield Pro is rated for low-energy impacts, and it can even be fitted with optional earmuffs. Plus, you'll feel like a shop samurai wearing one ...

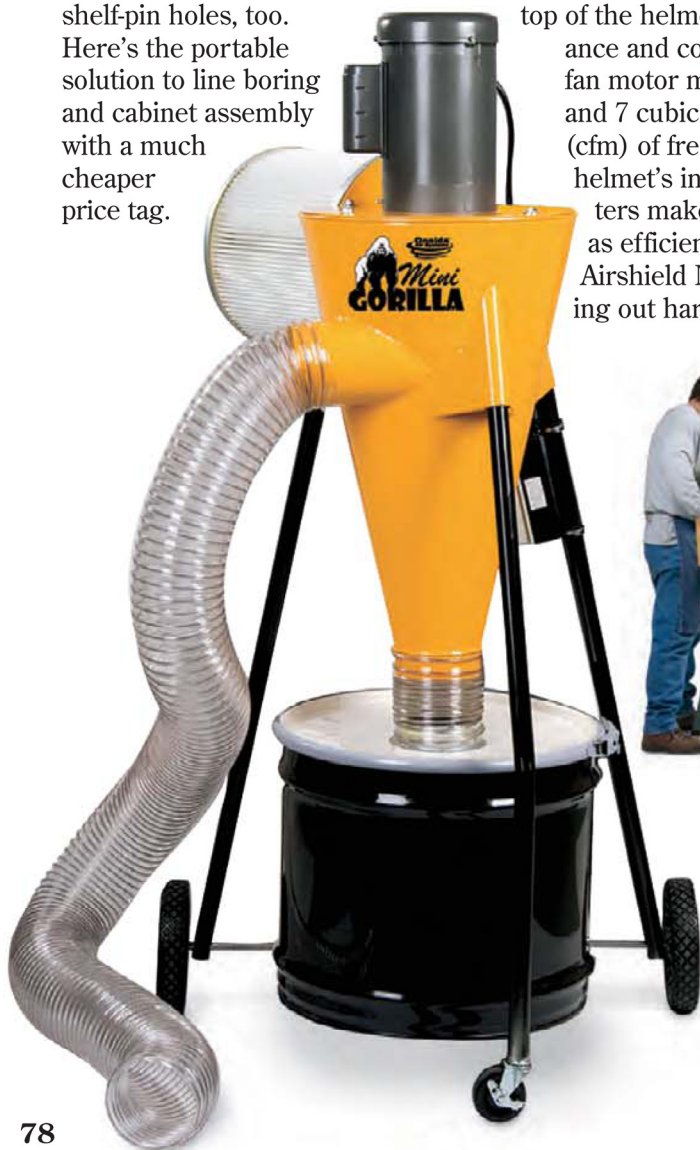
Have you always wanted a true cyclonic dust collector that can fit easily in a small shop with a low ceiling? Well, Oneida's Mini Gorilla (\$890) can answer that prayer. Its 1½HP Baldor motor draws 600 cfm of air through a 5" hose and empties heavy debris into a 17-gallon drum. The pleated filter will capture 99.9 percent of fine dust between .2 and 2 microns. Best of all, the whole unit is just 62" tall and rolls around on a tripod stand. So, move this baby where you need it, and get ready for some serious suction!

Chris Marshall is field editor for Woodworker's Journal.



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Oneida combines mobility with an industrial quality cyclone to create a powerful dust collector for the small shop. The unit draws 600 cfm and separates 99.9 percent of fine dust. \$890. www.oneida-air.com • 800-732-4065



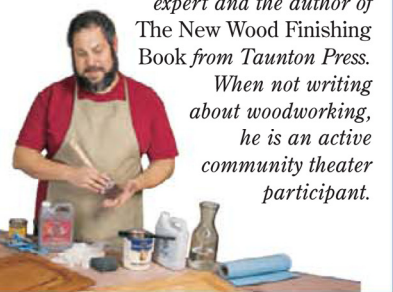
Condition Your Wood for an Even Finish

By Michael Dresdner

ABOUT MICHAEL DRESDNER

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

When not writing about woodworking, he is an active community theater participant.



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with your question.

Q I need to oil stain a new red oak handrail on my stairs. The newel posts and balusters have a lot of exposed end grain where they have been machined. What can I do to stain the large areas with end grain to match the areas without end grain?

*Louis S Radell
Honesdale, Pennsylvania*

Michael Responds: The simplest method is to use wood conditioner, and the odds are good that the company whose stain you are using also makes a wood conditioner to go with it. Flood it on very liberally, wipe it all off and apply stain while the wood is still wet. Wood conditioner acts like clear stain, pre-filling the end grain pores with colorless liquid "stain" in order to prevent the pores from sucking up too much colored stain.

Another method is to pre-seal the end grain. That can be even more effective, but it is a lot more work. Use thin, dewaxed shellac, no more than a one pound cut, or use Zinsser® SealCoat™ reduced by half with denatured alcohol. Flood it on as before, and immediately wipe off whatever is not absorbed. This time, let the shellac dry, then sand the entire surface, flat and end grain, until the shellac is sanded off the flat grain areas but remains filling the end grain. When you stain, the shellac lodged deep in the end grain will block excess stain absorption. As you can see, wood conditioner is an easier alternative.

Q My wife and I recently retired and now have time to devote to long-time hobbies. Hers is refinishing and refurbishing furniture, and mine is woodworking. We've always just used stain

but have had problems with uneven appearance, stain too dark and so on with certain woods and pieces of old furniture. I've seen on home improvement TV shows and have noticed on inexpensive furniture that you can apparently paint on a finish that makes just about anything — MDF, plywood, softer woods and so on — look very close to mahogany, walnut or cherry. I've done some research on the Web and have not been able to come up with a kit or specific, detailed instructions on, say, how to take a piece of MDF and make it look like mahogany. Can you point us in the right direction?

*Jeff Noyes
Macon, Georgia*

Michael Responds: I hope I don't have to tell you not to believe everything you see on TV. As for printed finishes on cheap furniture, they are typically done by laminating



Use conditioner (center) or a shellac solution (right) to keep your end grain from absorbing too much finish.

Bare Wood

Wood Conditioner

50% Shellac

"PERHAPS IT IS PRESUMPTUOUS OF ME, BUT I RATHER SUSPECT IT WOULD BE A LOT EASIER TO LEARN HOW TO STAIN WOOD SO THAT IT COMES OUT EVEN."

a thin sheet of vinyl or mylar onto MDF or wood. That laminate contains a color photo of whatever wood they want to mimic. Obviously, that's not practical in your case.

There are techniques for fake graining, or *faux bois* as it is called, which use finish to mimic the look of wood grain, and you can certainly learn them. Most art and home stores sell graining tools and all the materials you need to do this once popular finishing technique, and some companies even

sell kits to do it. But I have to warn you that it involves a lot more skill and practice than the literature implies. My local home improvement store even carries several books that teach fake graining, and I know of a number of finishing schools that teach these nifty tricks.

If you can't afford taking a class and don't like learning from books, find your closest local community theater and sidle up to the set painter. I've yet to meet a good set painter that did not know how to do fake graining.

You might also take a look at this website, where you will find some rudimentary fake graining instructions:

www.zinsser.com/FauxDetails.asp?ProjectID=29

That said, perhaps it is presumptuous of me, but I rather suspect it would be a lot easier to learn how to stain wood so that it comes out even. Before you ask, I've covered that topic repeatedly both in previous issues of this magazine and in all four of my books on finishing.

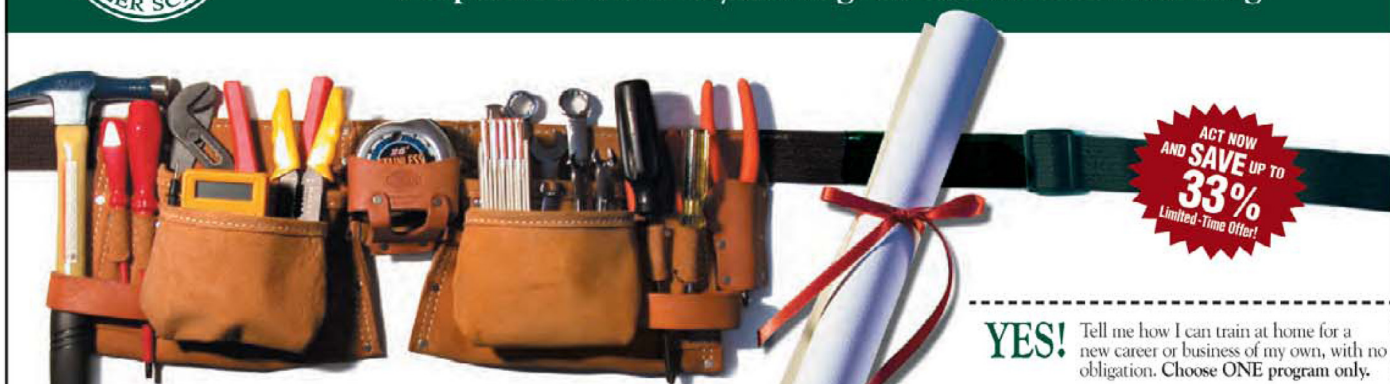


WINNER! For simply sending in his question on faking wood stain, Jeff Noyes of Macon, Georgia, wins **Liberon's Repair, Renovate and Revive Furniture Kit**. Each issue we toss new questions into a hat and draw a winner.



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800-437-3635

Rockler:
800-279-4441

Ryobi:
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Striker:
704-658-9332

Varathane:
800-323-3584

NOTE: See *Quik-Link* on page 90 for web links to these tools.

It's not unheard of to find that a new tool alters your view of woodworking, but I can't think of any I've picked up lately that are quite as illuminating as these new LED worklights. Both *Rockler Woodworking and Hardware* and *Striker®* have recently come out with these little magnetic beauties that stick to your machines and show you what you're doing — even way up close.

Striker's Magnetic LED Light is a wide angle spotlight that sticks to stuff with the aid of rare-earth magnets dotted around the perimeter. That means it can also be used to pick up screws, nails or other parts you might drop. It sells for \$7 to \$8.

Rockler's LED Work Light sheds even more light on things with two interchangeable heads: a spotlight with 14 LED bulbs and a magnifying light with 18 (it's a 5x magnifier). Both heads are also available separately. Mount it to something metal



Rockler's LED Work Light

with the magnetic base, and use the flexible arm to shine the light right where you want it. Prices range from \$10 for the spotlight head only to about \$65 for the Work Light with Magnifying Head.

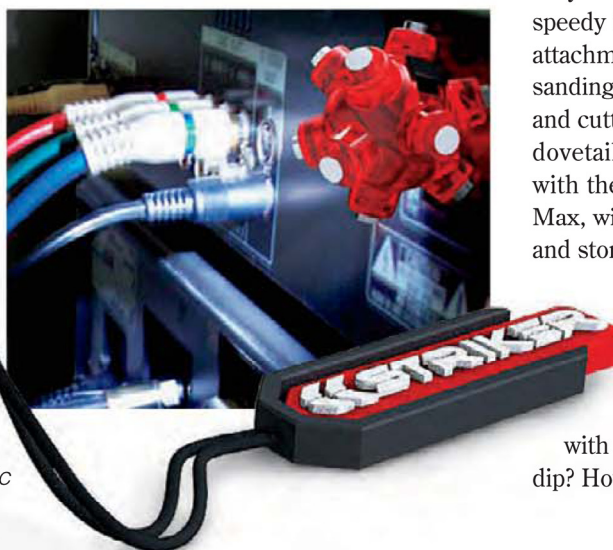
Another multitasking tool in this month's roundup is *Dremel's new Multi-Max™ Oscillating Tool System*. It comes with 12 different accessories and the *QuickFit™* system for accessory changes, so it's super-speedy to find the right attachment for all of the sanding, grinding, scraping and cutting — including dovetails — you can do with the tool. The new Multi-Max, with all its accessories and storage case, sells for under \$100.

Is all that multitasking making you hungry?

Ready to settle down with a bowl of chips and dip? How about a cool bowl



Striker's Magnetic LED Light





Dremel's
Multi-Max™
Oscillating
Tool System

and tray you made yourself, using only your router and one of the templates included with CMT's clever **Bowl and Tray Set** — no lathe required. Glue up some laminations to create your own butcher block for an even cooler look. You can pick up the set for under \$100.

Did you know whipped cream now comes in a can? That may be an inside joke for my dad, but more importantly for woodworkers, did you know wood stain now comes in the same type of spray-on-some-foam can? It does, and it's called **FoamStain**, now available from *Varathane*. Spray the foam on, rub it in, and you're done (well, you do have to start by paying \$7.99).

What will they think of next to make life easier for

woodworkers? How about a screwdriver that holds the screws for you?

Yes, *Black & Decker's* brand-new **LI4000 SmartDriver Cordless Screwdriver** actually does this: there's a retractable magnetic screw holder that holds on to the screw so you can use both



B&D's SmartDriver

hands for operating the tool, bracing yourself in an awkward position, holding project pieces together, and so forth. Of course, you won't

Continues on page 90 ...



CMT's Bowl and Tray Set

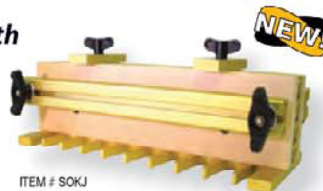
SOMMERFELD'S TOOLS

For Wood

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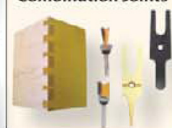
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Amana's In-Tech Replaceable Router Bits



get as much exercise picking up all those screws you drop but, hey, that's the price — \$39.99 — you pay.

Driving, cutting ... what else do you do with your tools? How about drilling? Ryobi has come out with a tool that I think could be called the "anti-stupid" drill. Somehow, that's not what their marketing department

actually named the **P814 Lithium-ion 18-volt AutoShift™**

— but it's essentially what "AutoShift" means. If you're drilling along and start to go into a

high torque application, the drill will automatically down-shift its speed, then resume a higher speed when you're done. Yes, this \$199 drill may actually be smarter than some people.

Something else that may interest some of you — or, to judge from our mail, a lot of you — is an answer to the question of how to sharpen router bits. Amana Tool's latest answer: don't. Replace the knives instead. They've come out with **In-Tech™ Replaceable Carbide Insert Knife Router Bits**. The series includes nine profiles of router bits, which



Ryobi's P814 AutoShift™

Amana claims will last four times longer than regular bits. Prices for the bits, made of a sub-micro grade of carbide, start at \$16.88, while the cost for the replacement knives starts at \$3.08.

— Joanna Werch Takes



Bob with the Domino

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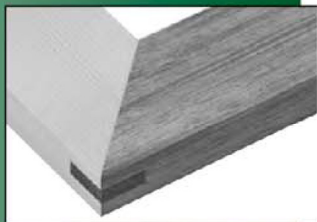
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Basic Butt Joints

IT'S A FRAME-UP



Butt Joints



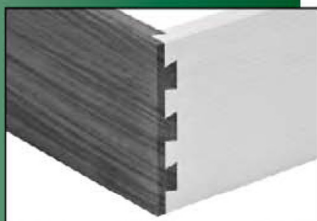
Miter Joints



Mortise and Tenon Joints



Rabbet and Dado Joints



Dovetail Joints

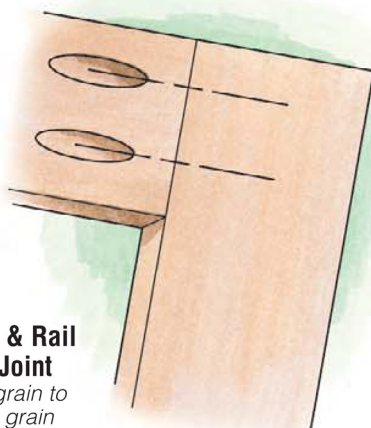


Finger and Lap Joints

This year, *Skill Builder* will be teaching six key woodworking joints, and there's no better place to start than the basic butt joint: The square-cut ends or edges of two parts simply butt together to form a panel, a frame, a box, a drawer or a carcass. It's a great quick joint when the speed of making and assembling a project is paramount. There's no need to size the parts with added lengths, as with mortise and tenon joints, and no time-consuming machining of the joints themselves. Every time you glue together two boards to make a wider panel, you're cre-

Stile & Rail Butt Joint

End grain to edge grain



ating a butt joint. Butt joints can be made by joining parts edge-to-edge, as boards forming a wide panel; edge-to-end, as face frame members are in a cabinet frame; or edge-to-face, as found at the corner of a box or the dividers in a drawer.

Although simple to make, end grain butt joints are the weakest of all joints. Glue forms a strong bond between solid-wood parts butted edge-to-edge, but it offers little strength for other varieties of butt joints. Adding nails to a glued assembly, like a plywood or MDF box, adds some strength, and the nails help hold the workpieces



Test cuts on your saw (top photo) will ensure that both parts of a butt joint are square. Learn about more options for making butt joints — including pocket screw joinery (middle and bottom photos) — at our website; woodworkersjournal.com.

together as the glue dries. However, it's best to reserve this kind of construction for light-duty uses — never use glued and nailed butt joints to build a furniture frame or cabinet carcass intended for heavy-duty use.

For sturdier, long-lasting butt joints, you need to add some reinforcement. The easiest way to reinforce a butt joint is with glue blocks, for example, added inside the corners of a carcass assembly. For even greater strength, butts can be reinforced with dowels, biscuits, splines, pocket screws or butterfly inlays. Most of these are easy to add to a basic butt joint, but they'll require some machine work.

—Sandor Nagyszalanczy

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MORE ON THE WEB
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For a more detailed article on butt joints, go to woodworkersjournal.com and click on the More on the Web tab. Or send a large SASE to Woodworker's Journal, Skill Builder 7, 4365 Willow Drive, Medina, MN 55340.

What's The Secret To Flawless Edge Profiles With NO REWORK?

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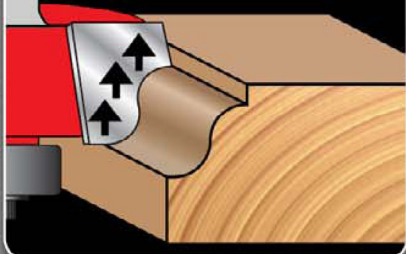
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Freud's New Quadra-Cut™ 4 Cutter Design

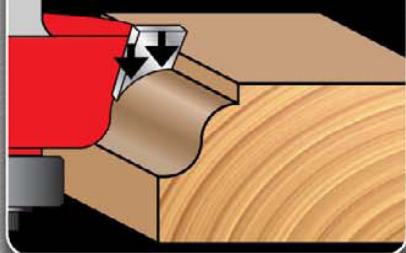


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- Rounding Over Bit, 5/8" Radius
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