

WOODWORKER'S JOURNAL

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Make This Classic Bookcase

8 Bench Top Drill Presses:
Who will win our "Best Bet" honors?
(page 56)

PLUS:

Elegant Side Table

Hollow Turning Tools

Ian Kirby: How to Design Your Own Projects

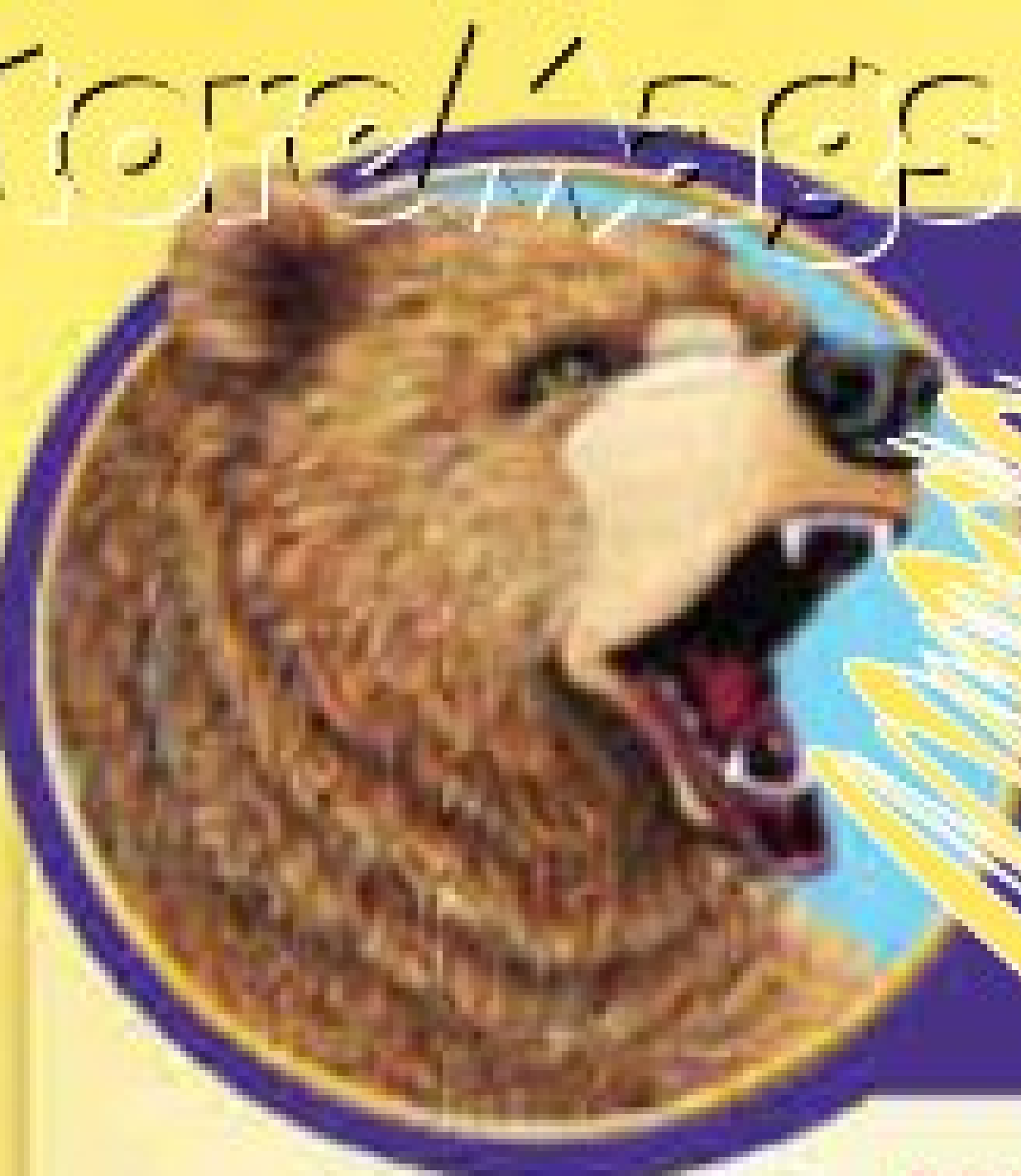
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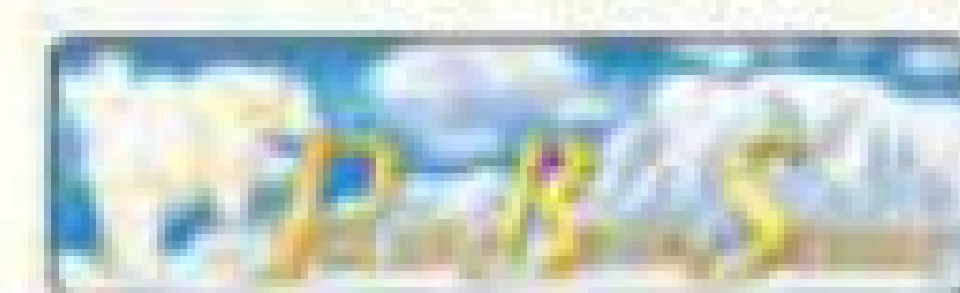
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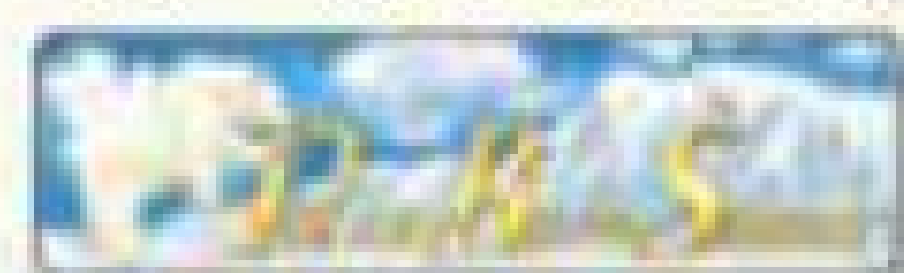
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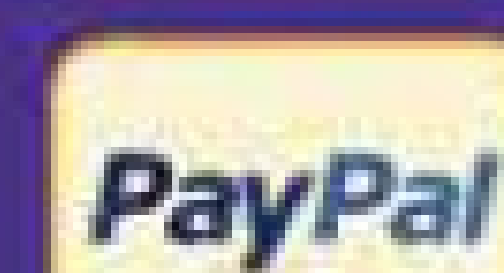
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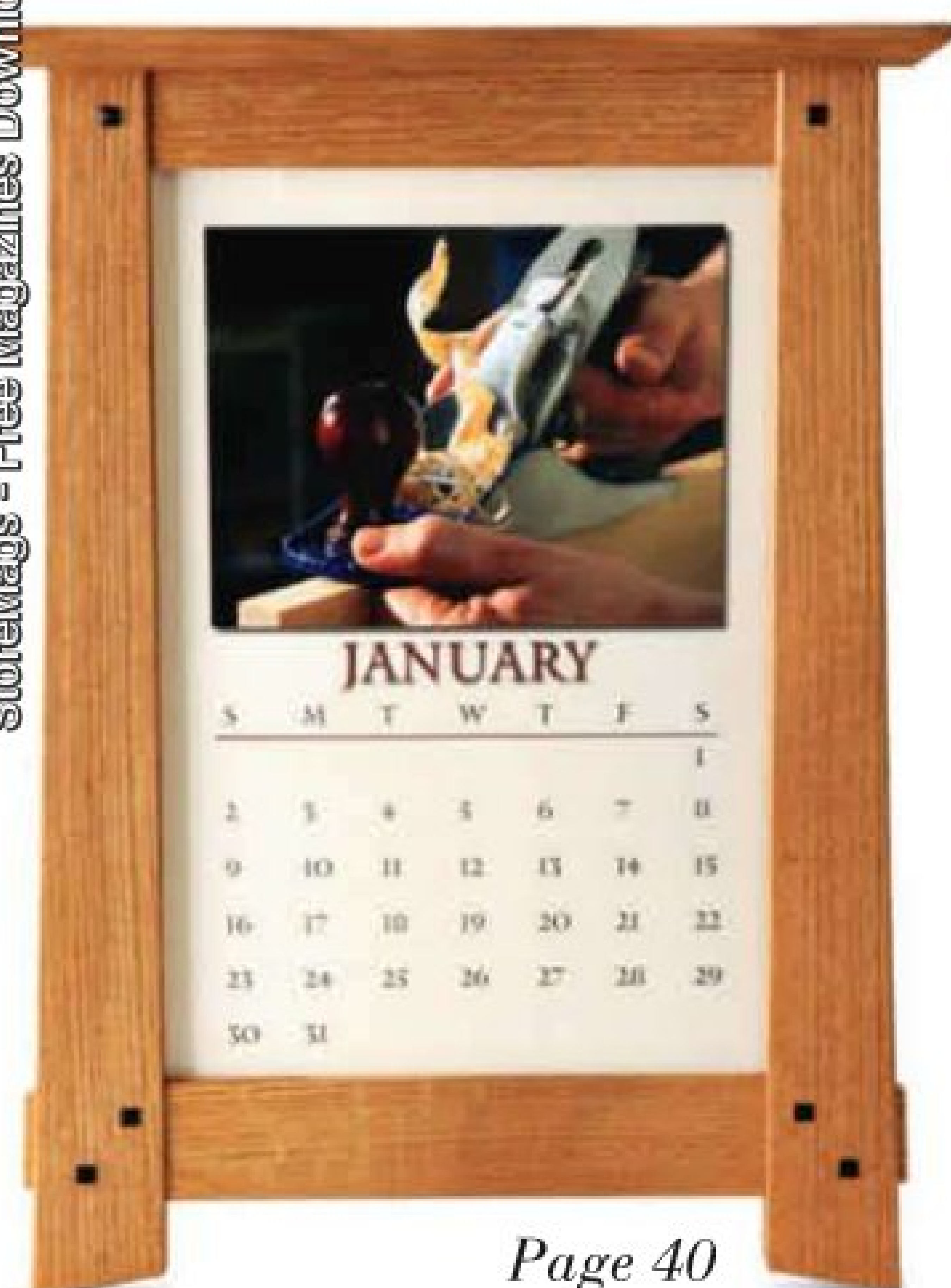
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Readers Tweak Our Designs

THE SECOND TIME AROUND...

Like so many of you, sometimes I can't resist the notion of having



a go at one of our projects. The table I built for this issue was, in an earlier life (our November 1990 issue, to be precise), a nice piece of country furniture. I changed species, added a key design element and subtracted another, and it turned

into a horse of a completely different color. Is it better or worse — I guess that is up to you to decide.

That's why I so enjoy getting letters and photos (like the ones below and on page 8) from readers who have built a project featured in our magazine. There's just nothing better than seeing an interpretation (including corrections and improvements) of one of our designs. So, are you ready to tackle the bookcase in this issue ... or perhaps yet another version of the table? That's something I'd really like to see!

— Rob Johnstone



colored Plexiglas, and the hardware is from Home Depot. I stained the door with Golden Oak and two coats of clear poly. As an extra touch, I used walnut dowels to pin the joints. For the screen, I used some leftover screening from other projects that I sprayed with Antique Brass Metallic paint. All the hardware was also painted the same color.

One week of part-time work, and it was done. As you can see from the pictures, it turned out just plain beautiful.

Jesse Diaz
Bulverde, Texas

Customizing Challenges

While I have no right to question the professionalism of the author of this article ["Customizing Your Band Saw,"

October 2010], I must admit there are questions I have.

I purchased a riser block for my band saw and discovered it would not seat correctly. I contacted the company and they disclosed the method of repair, but it never did operate correctly.

I then purchased a saw table for the band saw from a woodworking retailer and, once assembled, discovered the zero clearance insert plate was set below the tabletop, causing it to catch on the stock I was trying to cut. The hold-down T-tracks were not true with the top, either, and they continued to catch the piece of wood, thereby making the saw hazardous to use, not to mention annoying.

I spoke to their representative, who disclosed

The Perfect Door

As we were remodeling our front door, I came home with a copy of *Woodworker's Journal* and told my partner that I had found the perfect screen door ["Make Your Own Screen Door," August 2010] to finish off the new stained glass door that we had just installed. Once she saw the pictures, she was 100 percent sold.

I decided to make the door out of oak. The glass is



that this happens periodically, but they would do nothing to rectify the issue.

I was very pleased I had not discarded my parts as I returned the band saw to its original state. I did purchase a rip fence from another specialty company, which works very well.

I decided, after questioning several people who had the same experience I had with the band saw riser, to purchase a band saw that is designed to handle 12" resaw cuts.

I appreciate the work your magazine does and the studies, and I understand sponsorship; however, before giving the

thumbs-up to a product, I think you should do some studies by asking others.

I refuse to purchase any MDF manufactured tabletops.

Greg Long
via Internet

A "Bit" of Help

I wrote to you about countersink bits ["Countersink Options for Woodworkers"] in the April 2010 edition. Your response was published in the August 2010 edition ["Letters"]. After reading your response, I was disappointed and decided to move on and forget about the bits.

Several days later, I was contacted by a local individual



Are there potential problems that could arise if a home shop woodworker decides to modify existing tools? Our reader found that every attempt may not go as smoothly as one would desire.

Letters continues on page 8 ...



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who gave me some potential sources for the bits. I asked how he found me; he stated by an Internet search. Several more days passed, and I received another call from a woodworker out east who had an unused set still hanging in his workshop. Later that week, I received two unused bits in the mail from still another reader.

I have to tell you I was flabbergasted that three different woodworkers took the time to track me down and offer help.

There are still caring people in this world that know how to use today's technology and, although I have thanked them privately, I want to acknowledge them and thank them publically. Thanks a million to Bill in New York and Howard in Maryland. Incidentally, I did work out a deal for the set from the second individual.

Dave Selewski
Wayne, Michigan

Finally, a Finger Plane

It took three attempts, but I finally got a working finger plane ["Classic Finger Plane," *October 2010*]. In addition to errors of my own, I found that the bedding angle of 45 degrees was much too steep. The iron, a modified chisel blade, simply dug in. I tried one with a bedding angle of 35 degrees and now have a good, workable plane.

George McClellan
San Gabriel, California

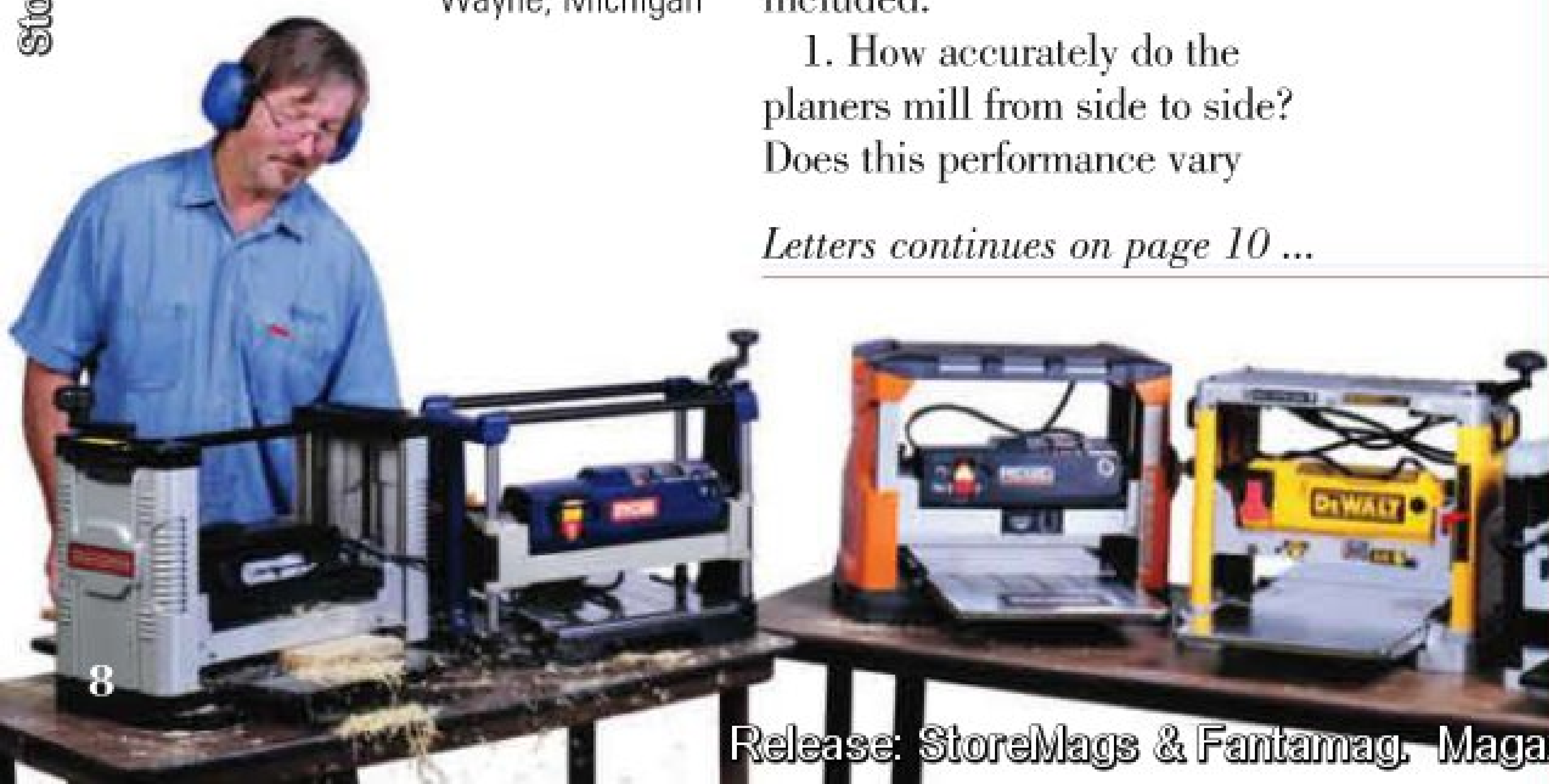
More Plane Talk

I read Sandor Nagyszalanczy's article comparing low-end planers ["Affordable Benchtop Portable Planers," *October 2010*] with great interest.

Two important issues were not included:

1. How accurately do the planers mill from side to side? Does this performance vary

Letters continues on page 10 ...



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Our editor's table in this issue (page 44) was inspired by a plan from our November 1990 issue. You'll now find over 90 classic downloadable plans like this, available for only \$1.00 each, in the WWJ Store section of woodworkersjournal.com

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One reader quests for advice on attaching featherboards to a benchtop table saw; another appreciates the inclusion of this product in our article.

depending on the stock thickness?

2. How much noise is generated by each unit?

These are the points on which I would expect low-end equipment to falter.

Robert Shelton
Walnut Creek, California

Sandor Nagyszalanczy Responds: I ran several boards that were nearly as wide as each planer's full width capacity. I didn't notice any significant difference in the thickness of planed boards from one edge to the other (I used an accurate dial caliper that would have shown measurement differences greater than 1/128 in.).

I didn't try to measure each portable planer's sound output because it's tricky to get a meaningful measurement. Sound measurements are affected by several factors: board thickness and hardness, depth of cut, the resonance of the stand the planer is attached to and the size and reflectivity of your shop. The bottom line is that all portable planers are loud, and they get considerably noisier when you run a board through them.

Subjectively, all the planers in the test group seemed to produce roughly the same amount of noise. They're certainly loud enough that I would never use one without wearing proper ear protection. (Note: the DeWALT planer has a three-knife cutterhead.)

Featherboards

I wanted to thank you for mentioning the Grip-Tite in your recent issue ["10 Ways to Use Featherboards," *October 2010*]. It is the first complete review of featherboards and hold-downs that I have seen in the 20 years since I invented the magnetic featherboard back in 1990.

Jerry Jaksha
www.grip-tite.com

Chris Marshall's article on featherboards prompted me to write for advice. I have a problem with regards to featherboards attaching to the table of my saw — a Makita 2703.

First, the miter guides are smaller than standard, so no accessories fit in them and second, the table is aluminum so magnetic featherboards don't work. Other than



replacing the saw, are there any solutions to my dilemma?

I have made an auxiliary fence with T-slots so I can use vertical featherboards. Thanks for any advice you might have.

Grant Thorsett
Salem, Oregon

Chris Marshall Responds: Grant, this is a problem intrinsic to many benchtop table saws.

With that as background, any solutions that you might come up with will need to be shop-made. If you cut strips of hardwood that fit into your miter slots, you can mount the featherboards to those strips with screws. You will, of course, need to clamp or secure the strips in place.

It might just be time for you to step up to a more robust table saw that would not present you with these specific challenges.



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Tricks of the Trade

Easy Add-Ons for Shop Tasks



Finish both door faces at once with two scrap legs and three screws.

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.

Give Cabinet Doors a Leg Up During Finishing

Finishing both sides of a cabinet door at the same time poses problems. You could stand it up or perhaps hang it from something, but it really is a process done best with the door laid flat. It once occurred to me that I could make "legs" for my doors to hold them up off the worksurface during finishing. I fasten a pair of small scrap legs into the hinge mortise areas with short screws and drive a longer screw through the hole that will receive the doorknob screw. This gives me a triangulated base. I finish the side with the legs

and screw facing up, then flip the door over and finish the other side. When I'm through, the holes in the mortises will be hidden by the hinges.

Greg Goekjian
Portland, Oregon

Anthony T. Brucato
Loxahatchee, Florida



Crush the end of a bamboo skewer to make a glue brush.

PICK OF THE TRICKS



Shop-made Hook Rules with Magnetic Appeal

A hook rule is useful for woodworking, but instead of spending the extra money to buy one, I make mine with shop supplies instead. I use a couple of rare-earth magnets to turn conventional rules into hook rules. On thicker steel rules, just snap a large magnet right to the end, as shown in the photo here. It forms a perfect 90° "hook" to align the end of the rule precisely

with the end of a workpiece. For thinner rules, place the magnet on the rule's face so a portion of it extends past the rule's end. Then affix a smaller magnet or even a machine nut under the larger one in the overhang area. Push the smaller magnet against the rule's end to form the hook.

Serge Duclos
Delson, Quebec

Eraser Squeeze

I'm not saying that I make a lot of mistakes, but most of my shop pencils seem to have erasers that have been worn flat with use. A quick squeeze with a pair of pliers compresses the remaining eraser, extending it above the metal ferrule for added use.

A.J. Hamler
Parkersburg, West Virginia



Extend a spent eraser by squeezing the pencil's ferrule.



Try outlining a scroll saw pattern with red ink for less eyestrain.

Red Pen Easier to See when Scrollsawing

I used to get eyestrain from continually aligning the black blade with a black pencil line when doing lots of scrollsawing. Now I trace my patterns with a red pen instead. It provides a line that's easier to reference

against the dark blade. Old style Bic® ballpoints with the long tips work best, but if you can't find one, any fine-tipped red pen will also do the job.

Dick Ayers
Barron, Wisconsin



Winner!

In addition to our standard payment (below) Serge Duclos of Delson, Quebec, will receive a Lamello Classic C3 Biscuit Joiner from Colonial Saw 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. Include a photo or drawing if necessary. Submit your Tricks to Woodworker's Journal, Dept. T/T, P.O. Box 261, Medina, MN 55340.

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Questions & Answers

Tapers, Tearout and Strippers

THIS ISSUE'S EXPERTS

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

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

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

Q When ordering new lathe spindle and tailstock parts, they are listed as #1 taper or #2 Morse taper. Please advise what differences there are in these parts and how I am to know which I need for my lathe.

Vern Gutz
Corry, Pennsylvania

A I'm not sure who Mr. Morse was and how he got to design the tapers, but that is water under the bridge. According to diracdelta.co.uk, an online science and engineering encyclopedia, a Morse taper is "A self-holding standard taper largely used on small cutting tools such as drills, end mills, and reamers, and on some machine spindles ..." And, I can add, on lathes.

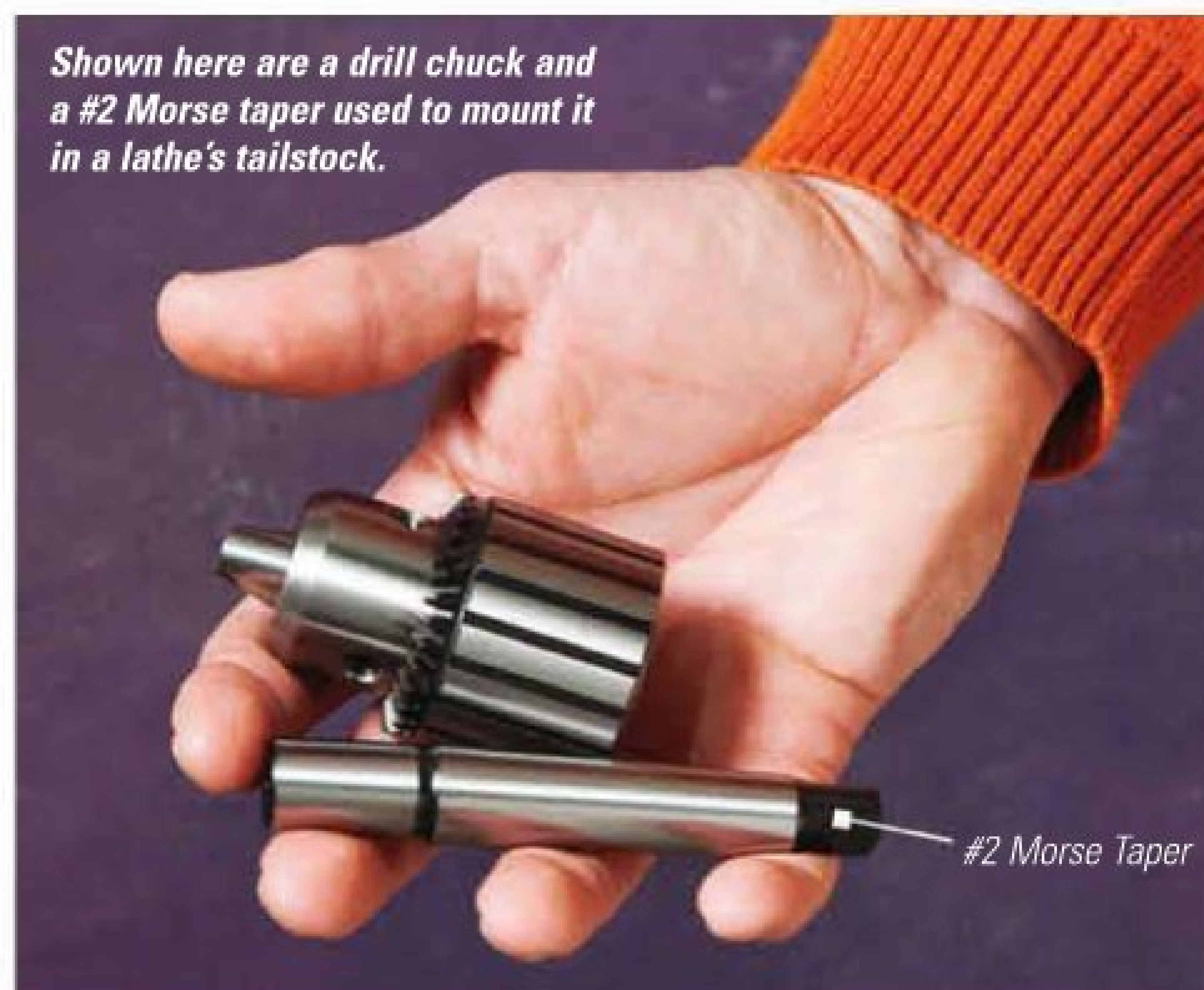
The difference between a #1 Morse taper and a #2 is basically the length and the "section" of the taper. Think of a long, tapered rod that starts at a point and gets larger in diameter the farther down the rod you go. You could cut a section out of any place along that rod and have the same taper. Both the #1 and 2 have the same taper per inch, but the #1 starts a bit closer to the "pointy end" of our imaginary rod.

The best way to know which type of taper you need is to consult your owner's manual. The other way is to take the taper out of your lathe and measure it. A #1 will be $2\frac{1}{8}$ " long, a #2 will be $2\frac{1}{16}$ " long.

— Rob Johnstone

Q I have been making raised panels for a few years now, and it seems no matter what speed I have the router set at and the moisture

Shown here are a drill chuck and a #2 Morse taper used to mount it in a lathe's tailstock.



content of the wood, I always get tearout when routing the profiles on the edge of my rails and stiles. Any tips would be greatly appreciated.

Dan Smith
Amana, Iowa

A We always have to make some assumptions when answering questions about machine setups we can't see, so I'll make a few here. Dan, I'll presume that your cope and stick bits are clean and sharp, and that when you set up the sticking cuts on the rails and stiles you are closing up your router table fence facings around the bit as

much as possible. Dull bits or gaps around the cutter can lead to tearout. It also might be the case that your router isn't quite powerful enough for the task; I wouldn't use less than a 2hp router for door joinery like this. Regardless of the variables, here's something to try: instead of cutting the entire sticking profile in one deep pass, try taking it in a few shallower passes, resetting the fence to expose more of the bit each time. (The bit height stays the same — only the fence can move.) There's no rule that says you can't "sneak up" on this cut, and removing less

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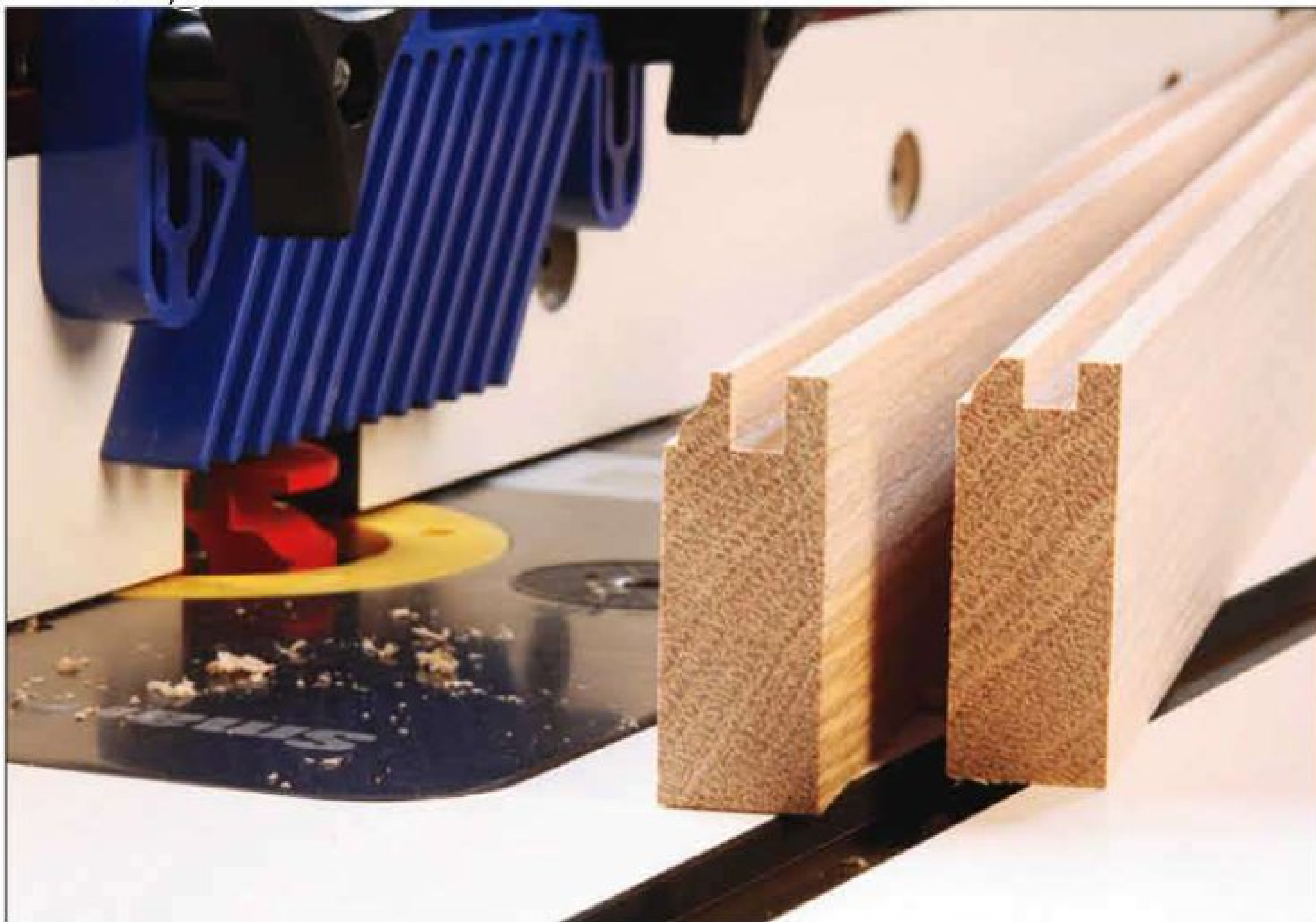
email address (if you have one)

with your question.

RECALL NOTICE

A recall is in effect involving the following items. If you need more information, visit "More on the Web" at woodworkersjournal.com.

- Model numbers RO400, RO400G, Ro410, RO41JK, RO410LW and FS3000ROS Black & Decker random-orbit sanders with date codes between 200701 and 200929; (866-220-1767).



To help avoid tearout while using stile and rail bits on a router table, field editor Chris Marshall recommends using properly sharpened router bits, a featherboard setup to help control the stock and taking more than one pass, if needed, to form the sticking profile.



Winner!

For simply sending in his question on #1 and Morse tapers, Vern Gutz of Corry, Pennsylvania, wins an Osborne Miter Gage by Excalibur (from General International). Each issue we toss new questions into a hat and draw a winner.

material almost always reduces the tendency for tearout (especially in wood that features wild or curly grain). Just make sure to have a featherboard in place over the bit to keep workpieces pressed down against the table when making multiple passes. Any vertical movement will ruin the cut.

— Chris Marshall

Q I have been advised that there is a beetle that has become a threat to black walnut trees (and their relatives), that it is in the Western United States, and that the bug could cross the Mississippi River soon. I was also advised that walnut grown west of the Mississippi River should not be brought (or shipped) to anywhere east of the Mississippi River to prevent the disease from spreading.

I also heard that a beetle has invaded North America from China. It is attacking ash trees, and some foresters are saying that it will probably wipe them off the face of the continent.

Is there truth to these stories, or are they just legends?

Bill Greaves
Staten Island, New York

A Both of the stories you have talked about are true. The black walnut tree threat (known as 1000 Cankers disease) is in many Western states and, according to some unverified reports, has crossed the Mississippi River to the east.

The emerald ash borer is moving unchecked across our Eastern hardwood forests. Barring a successful chemical or biological treatment, it will certainly be the end of the ash tree population as we know it.

— Rob Johnstone

Q I am trying to finish an old breakfront that has a painted antique finish. I can't strip, as it has parts done in veneer. I'm thinking of a painted antique finish, such as painting a base coat of red and black over the red, then sanding the black to show some of the red. Will this work, or do you have any other ideas?

Gene Frants
Woodside, California

A Let's start with the statement "I can't strip as it has parts done in veneer." That is completely erroneous.

You most certainly can strip it, using paint remover, without affecting the veneer one way or the other. Bear in mind that the vast majority of furniture is veneered, and if paint remover could not safely



David Cappaert, Michigan State University, Bugwood.org

This iridescent emerald invader is causing havoc in the native ash population of the Eastern United States. So far, attempts to slow it down have failed.

handle that, it would disappear from the marketplace.

That leaves us with the question of whether you need to strip the existing finish. While it is a good idea to do so, it is not always necessary.

Continues on page 16 ...



Ash
Lumber

Stumpers

A Beer Bucket?

Readers give shout-outs to the valve lock-out device.



While unlikely to be correct, the comment from **David Baylen** of Garden City, New York, regarding the Stumpers mystery tool from our *October 2010* issue is one of the more entertaining guesses we've had in a while: "I believe that this is a beer bucket. From the days when you would get a bucket of beer from the local pub and carry it home. Buckets were kept locked to a railing until paid for."

Particularly in its current rust-covered condition, the tool belonging to **Roger Webster** of Arlington, Vermont, does not look like a particularly appealing container for potent potables.

Fortunately, we heard from some other readers as well, such as **Tom Landon** of Lakeland, Florida, who wrote, "I believe its function is to prevent a valve from being turned on or off."

Jay Nielsen of San Antonio, who formerly worked in the oil fields of Texas, further clarified, "The mystery tool in the October issue is a valve lock assembly. The valve body and handle are inserted into the cup, and the strap is then placed around the back of the pipe, aligning the lock holes."

Lamar Atkinson

of Deer Park, Texas, who thought it might have been used for an electrical connection, said that, in that case, "the plug fits in the 'bucket,' and the bale prevents it from being removed."

James Moore of Etta, Mississippi, had some other options for its use. "The half-round metal piece with the slot would go under the valve, while the 'cup' would go over it. The entire assembly would then be locked with a padlock to keep people from either purposefully or inadvertently activating the valve. We use something similar in our community water system to lock out people who haven't paid their water bill for a period of time, and one of the plants that I used to work for also used them to keep people from turning on gases or water systems while they were being maintained."

James added, "Modern assemblies use heavy gauge chain instead of the thin metal strip, because someone intent on defeating the device pictured could do so easily with a hacksaw blade and five minutes' worth of effort."

—Joanna Werch Takes



Winner! Jay Nielsen of San Antonio, Texas, wins a Porter-Cable 12-volt MAX Compact Lithium 3/8" Drill/Driver Kit (Model PCL120DDC-2). We toss all the Stumpers letters into a hat to select a winner.

Questions & Answers continued



Paint removers and strippers, be they traditional or new formulas, can be used on veneered furniture.



If the existing finish is in good shape with no cracking or peeling, you can usually paint over it. Start by cleaning and degreasing the surface with either mineral spirits or TSP on nylon abrasive pads. When it is clean, sand lightly and seal with a coat of primer. Once the primer is dry, apply at least two coats of the red you have chosen. That way, you'll have enough material to sand back to red without sanding through it to the primer. Apply just enough black paint to cover, which will probably be one thin coat. It goes without saying that both colors should be the same type of paint and, if possible, the same brand.

When the black is dry, use either very fine paper or fine nylon abrasive pads to wear through the black until you get the right amount of red showing. Once you like the look, seal it with a coat of clear sealer of the same type as the paint you used: apply oil-based polyurethane over oil-based paints and water-based polyurethane over water-based paints.

—Michael Dresdner

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If you've started your new year dreaming of a new deck, you may be interested in the **Kreg Deck Jig**. It has an easy-grip handle and hardened steel drill guides to give you precise angles, secure hold and control over each joint during your deck building. Spacer rings



Bosch GCM12SD 12" Dual-Bevel Glide Miter Saw

ensure accurate deck board spacing for proper drainage and longer deck life, while three separate drill guides let you install deck boards in a variety of hard-to-reach areas. The Deck Jig works with ¼ to 5/4 stock. It's priced at \$99.99.

If you're installing crown molding, the *Crown Support* from **Bench Dog Tools** can give you a hand — so you don't have to wait on the availability of your spouse or your neighbor. The support assembly threads on to most standard 12-foot painter's poles, as well as a couple of specialty options, and straddles the molding. You can then slide the molding around and adjust it for the tightest fit possible, without need to climb up and down the ladder to readjust the molding support device.

Soft support pads accommodate moldings from 1½" to 8" wide. Once adjusted — tool-free — the support assembly swivels and wedges against the wall and ceiling, providing a secure hold with no risk of marring. The Crown Support retails for \$29.99.



Kreg Deck Jig



Bench Dog Crown Support



Bladed cutting tools, scissors, knives of all sorts and serrated blades can all be sharpened with the new *Work Sharp Knife and Tool Sharpener* from **Darex** (manufacturers of the Drill Doctor for drill bit sharpening). Patent-pending flexible abrasive belts and precision sharpening guides designed for a variety of applications work together to sharpen the knives and blades — which can also include hunting knives, kitchen knives, lawnmower blades and more — to specific angles set by the guides, while the belt flexes to any blade shape and creates a strong, shaving sharp edge. A 40° kitchen knife guide,



Darex Work Sharp Knife and Tool Sharpener

50° outdoor knife guide, serrated knife guide and scissor sharpening guide are included with the WSKTS, as are coarse-, medium- and fine-grit abrasive belts. (Contacting the company directly gives you the opportunity to order a different mixture of grits to meet your specific needs.) The handheld Knife and Tool Sharpener can be run on a

12-volt power inverter if you're away from your shop and is priced at \$69.95.

The new **Minwax® Professional Formula Sanding Sealer** goes on clear onto unstained bare wood interior surfaces (such as furniture, cabinets, doors and floors) without changing the color of the wood. It seals the grain and creates a smooth



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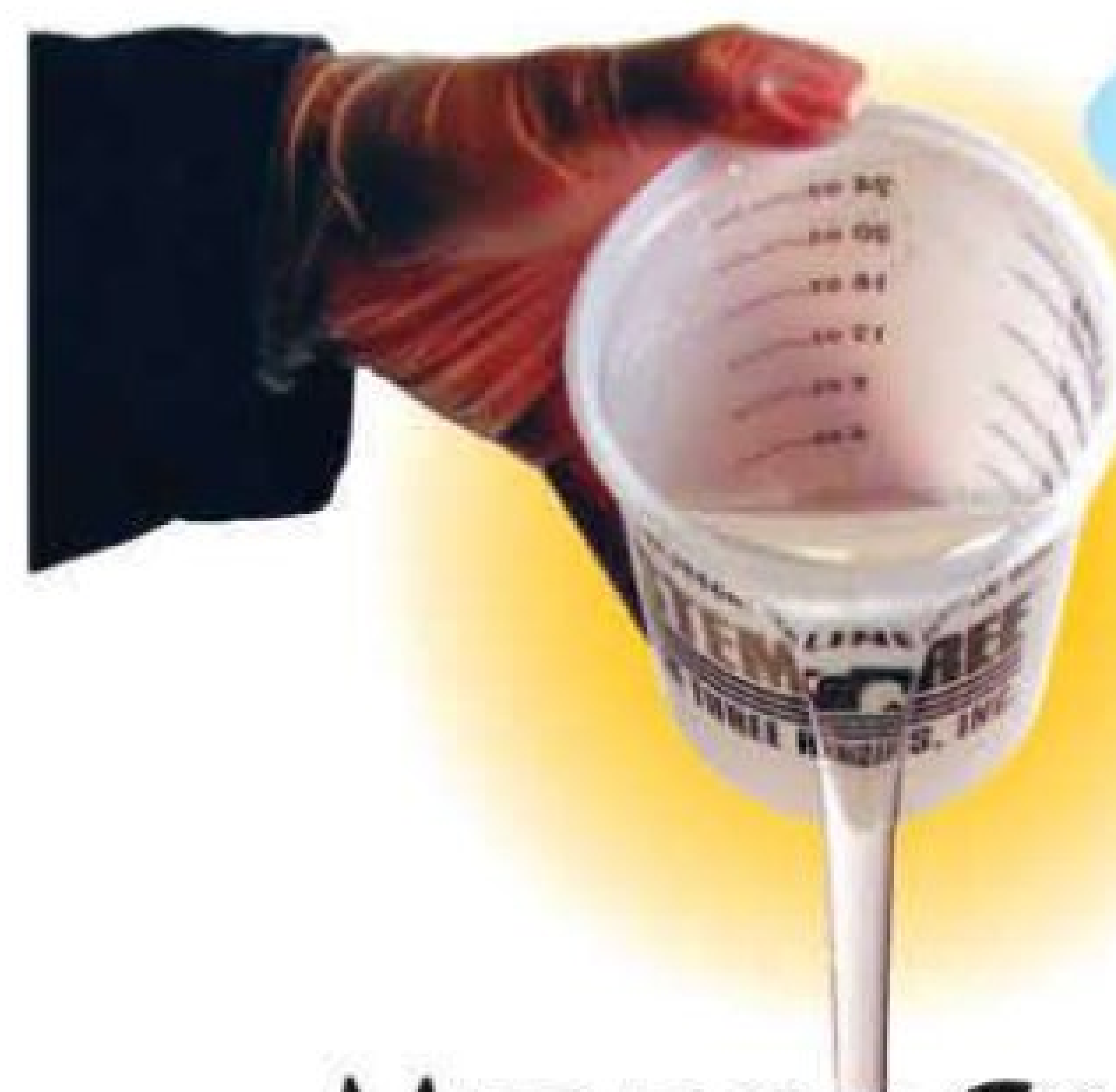
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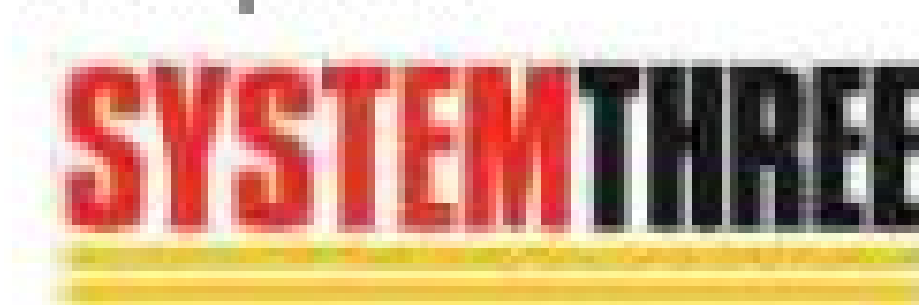
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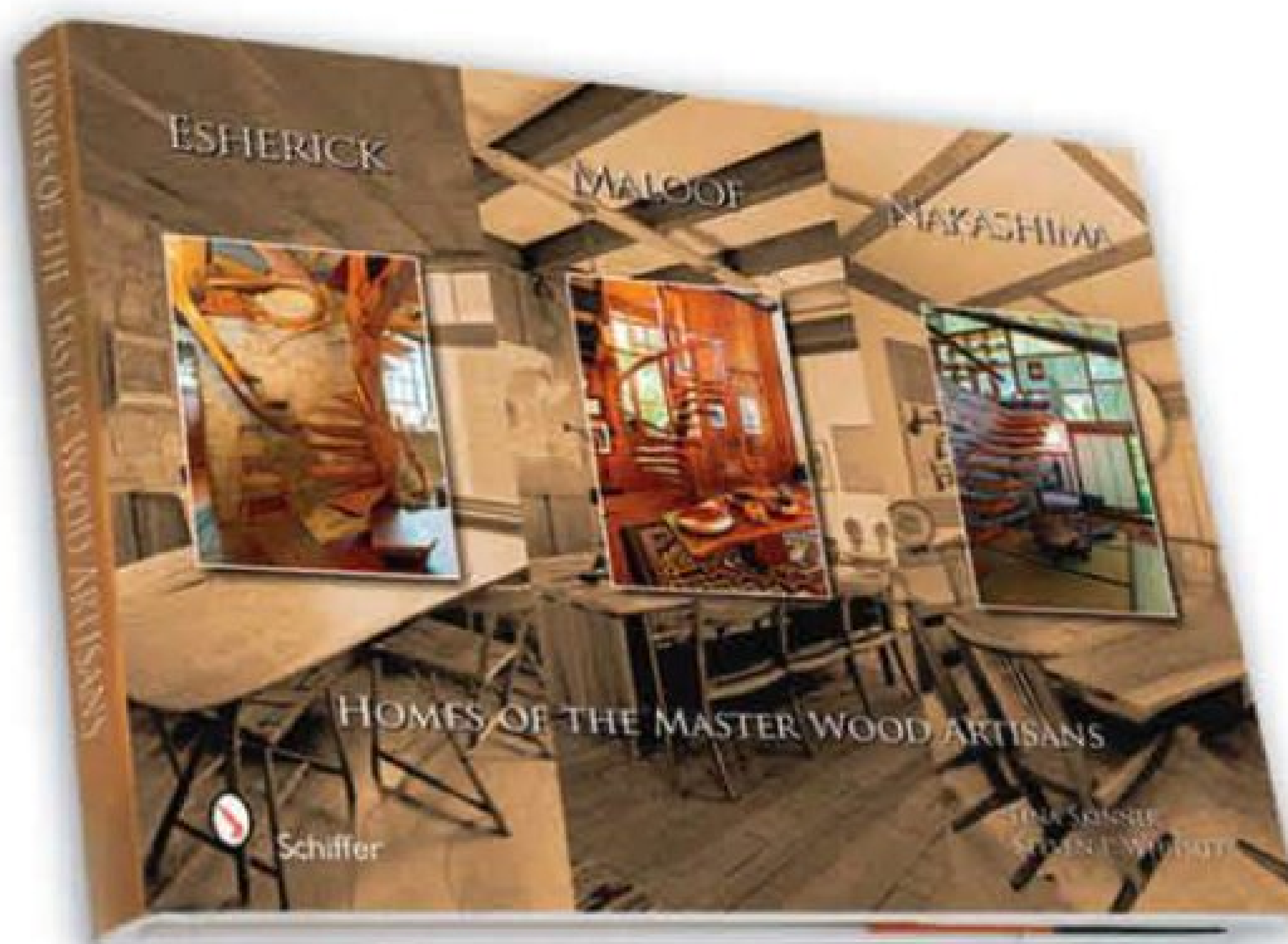


Rockler Bench Cookie™ Plus

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Rockler's Bench Cookies™ work holders have been released in a couple of new "flavors": the *Bench Cookie Plus*, which adds additional height, and the *Bench Cookie Home*, which adds an element of home decor. Bench Cookies Plus work with risers that thread into the bottom of Bench Cookie Plus on one end and into a standard round 3/4" benchdog hole on the other end. The risers come in standard or extra-large sizes, and the Bench Cookies Plus in "two-cookie" and "three-cookie" heights. The greater elevation can ease back strain, provide uninterrupted surfaces for finishing, and make it easier to use circular saws and other tools without risk of hitting the workbench. The Bench Cookie Plus sells for \$13.99 for a four-pack, while the risers are sold separately in pairs; \$3.99 for the



Esherick, Maloof and Nakashima: Homes of the Master Wood Artisans

standard length and \$7.99 for XL. The Bench Cookie Home, meanwhile, is a standard size Bench Cookie wrapped in a glossy black shell; four-packs sell for \$11.99.

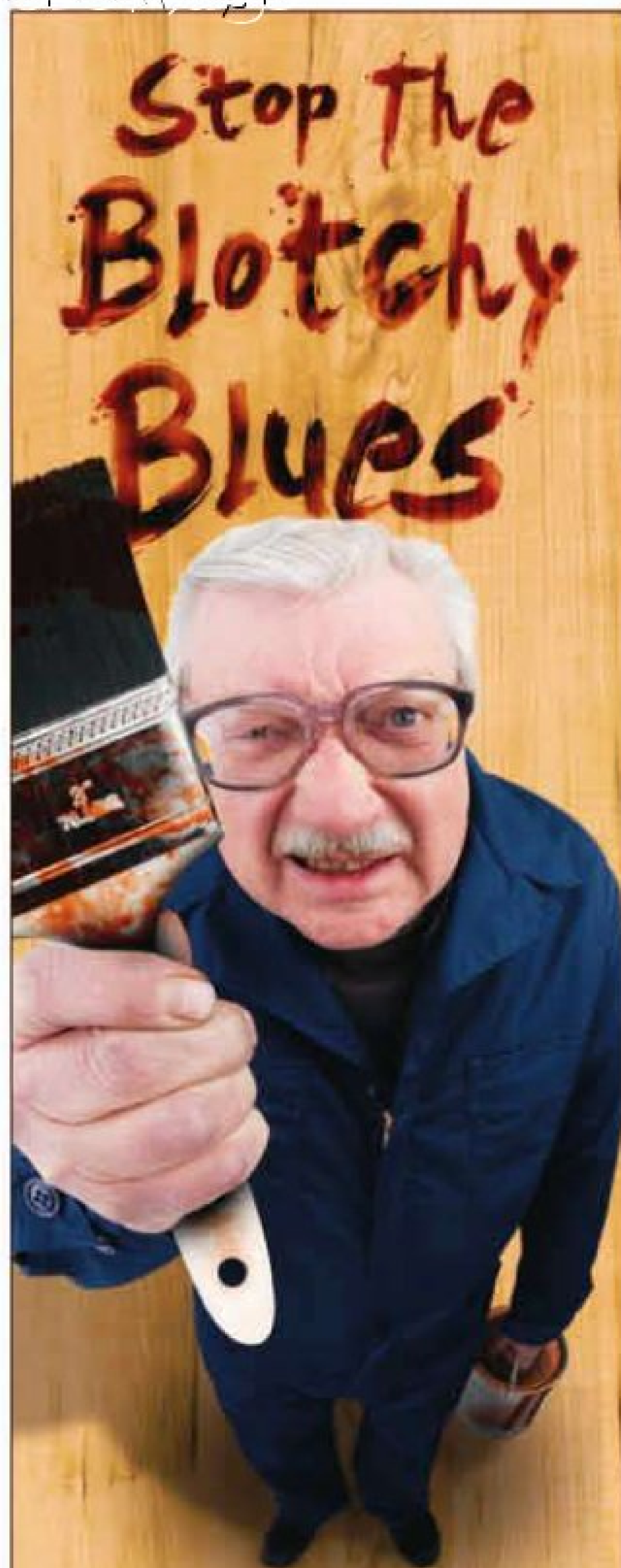
Although modern woodworking masters Wharton Esherick, George Nakashima and Sam Maloof have all passed on, the book *Esherick, Maloof & Nakashima: Homes of the Master Wood Artisans*, by Steven Paul Whitsitt and Tina Skinner makes it possible to "visit" each of their art-filled homes. Published by **Schiffer Publishing** (ISBN 978-0-7643-3202-9), the book contains brief biographies of each woodworker and extensive photography of the furniture, fixtures and other artwork they created for their own homes. The book is priced at \$49.99.

Tool company **RIDGID** has partnered with computer maker **Dell** to create four laptops, designed for contractor use on jobsites, but which would work just as well for woodworkers doing outside or home improvement projects. The *RIDGID Contractor Grade Laptops* withstand drops of up to four feet, plus conditions such as pounding rain, blowing dust and dirt and extreme temperatures. They come with RIDGID monitoring, recording and data management tools as part of the pre-loaded software. Pricing ranges from \$4,754 for the E6400 XFR, equipped with Dell's Ballistic Armor™ Protection System, to \$1,579 for the standard E6410, designed for long battery life.

— Joanna Werch Takes



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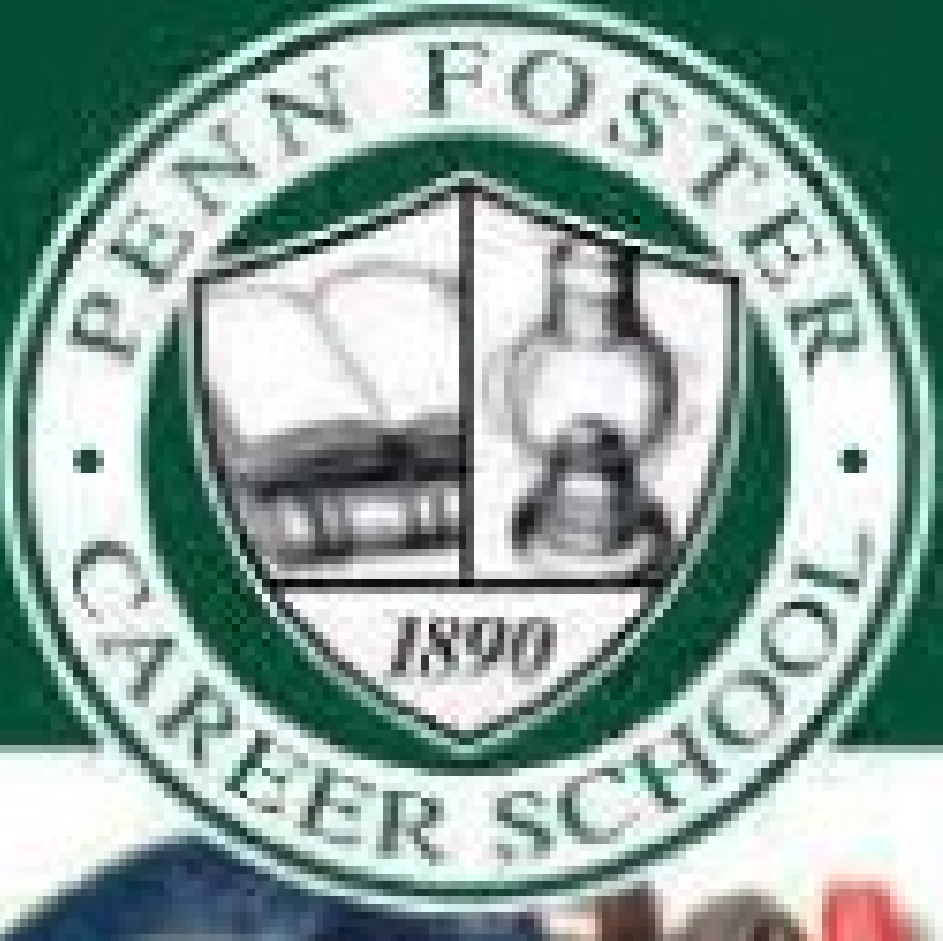
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Finding Refuge in the Workshop



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"Multiple Sclerosis is a complex disease for which the cause and cure are still unknown."

Rosalind C. Kalb, Ph.D.

Author, "Multiple Sclerosis: The Questions You Have, the Answers You Need."

I was 30 years old and finishing my training in orthopedic surgery when I was diagnosed with multiple sclerosis. A wise neurologist advised me not to abandon my dreams but rather to work with my hands and enjoy life as long as possible. For 30 years, I practiced general orthopedics with a specialty in hip and knee joint replacements. At home, with my wife, Jo, and three children, I enjoyed my workshop, so Jo suggested I make the yearly Christmas presents. I naturally depended on my hands to create ideas for projects ranging from wood pieces to metal and wire sculpture.

In my late 50s, I began to wonder if my legs would hold up through a surgical procedure. This time, I took the advice of Yogi Berra and decided to "get off the mound before getting hit." I retired. The first few years, I finished some research, studied medical ethics, traveled and read books for fun. Then, the disease progressed. I could not walk anymore and was desolate from lack of physical activity. Gradually, I began to think about working with my hands again. I imagined what I could and could not do. I dared to dream of a woodshop and began putting one together. I would work with wooden joints. And, so I have.

My disability involves marked loss of use of the lower extremities and minimal

loss of the upper extremities. I am confined to a wheelchair but am able to transfer to a stool and work at the bench or on one of my machines.

Disabilities come in many variations, and each person responds in his or her own way. I am bold to explain how I enjoy the challenges and trust my experience will help others.

Fortunately, my shop is very small. The floor space is 12 by 18 foot. I have two standard workbenches, a table saw, band saw, scroll saw, router table, drill press and two lathes — one a mini-lathe and the other standard size. I ambulate through the maze of machines and benches using each as a grab bar until I sit on my stool and carry out whatever function is indicated.



Phil Gross designs small projects, such as boxes, trays and turnings, that he can complete in one sitting.



As a result, my projects are designed to fit my abilities. I keep the projects small in order to create them in a sitting position. Boxes and trays made on the router table work very well. It's an opportunity to use box joints, dovetail joints and splines. To add interest, and since we live near the California wine country, I have lined the bottom of trays with wine corks from various wineries.

Carving also interests me. As long as the project is kept small, I carve sitting down. Working with the lathe is my favorite pursuit. Because of balance problems, the lathe is particularly suited for me. Sitting gives me a relatively stable stance and is enhanced by one hand on a rigid object, which is similar to the third leg on a stool. This is provided with my left hand secured on the tool-rest holding the tool stable while the right hand directs the angle and the depth of the cut. There are detailed

instructions on the stance needed for good woodturning, and these have to be modified to the sitting position. There are obviously enough disabled people to provide a market, as at least two major lathe producers offer lathes for use in the sitting position.

I am aware of the risk of picking up objects — like a screw on the floor. In this case, a device to grasp things is helpful. Some of these grabbers come with a magnet at the tip, which simplifies picking up small metal objects.

Another common problem for me is loss of balance. Falling down usually occurs when I do not have the patience or sense to use the grabbing device to pick something off the floor. When this happens, I call for help through a service agency. This is done by use of a device, worn like a wristwatch, and activated by



The author uses a lathe made by one of the tool makers (in this case, Oneway) who build adaptive tools.

pressing a button. A radio signal is transmitted to a central depot from which a caller talks and finds out what I need. The caller then contacts the appropriate number, and help comes.

Something has to be said about safety. As disabled people, we are very vulnerable. Therefore, any maneuver on the various machines should be well thought-out before we start. In my small shop, I not only have to see if there is enough room to feed the board into the machine, but also plan the space for the board to emerge. Fatigue is another problem often ignored and makes us more prone to accidents. When tired, we should stop working.

My workshop is my refuge. Not many activities I am able to do are as available or afford as favorable an outcome. Fearful of losing my creative energy, I am not tempted to enter the production mode. There are people who do this well, but I realize my limits. By giving away most of my finished pieces, I continue to enjoy the craft and reap immeasurable satisfaction.

— H. Phil Gross, M.D.

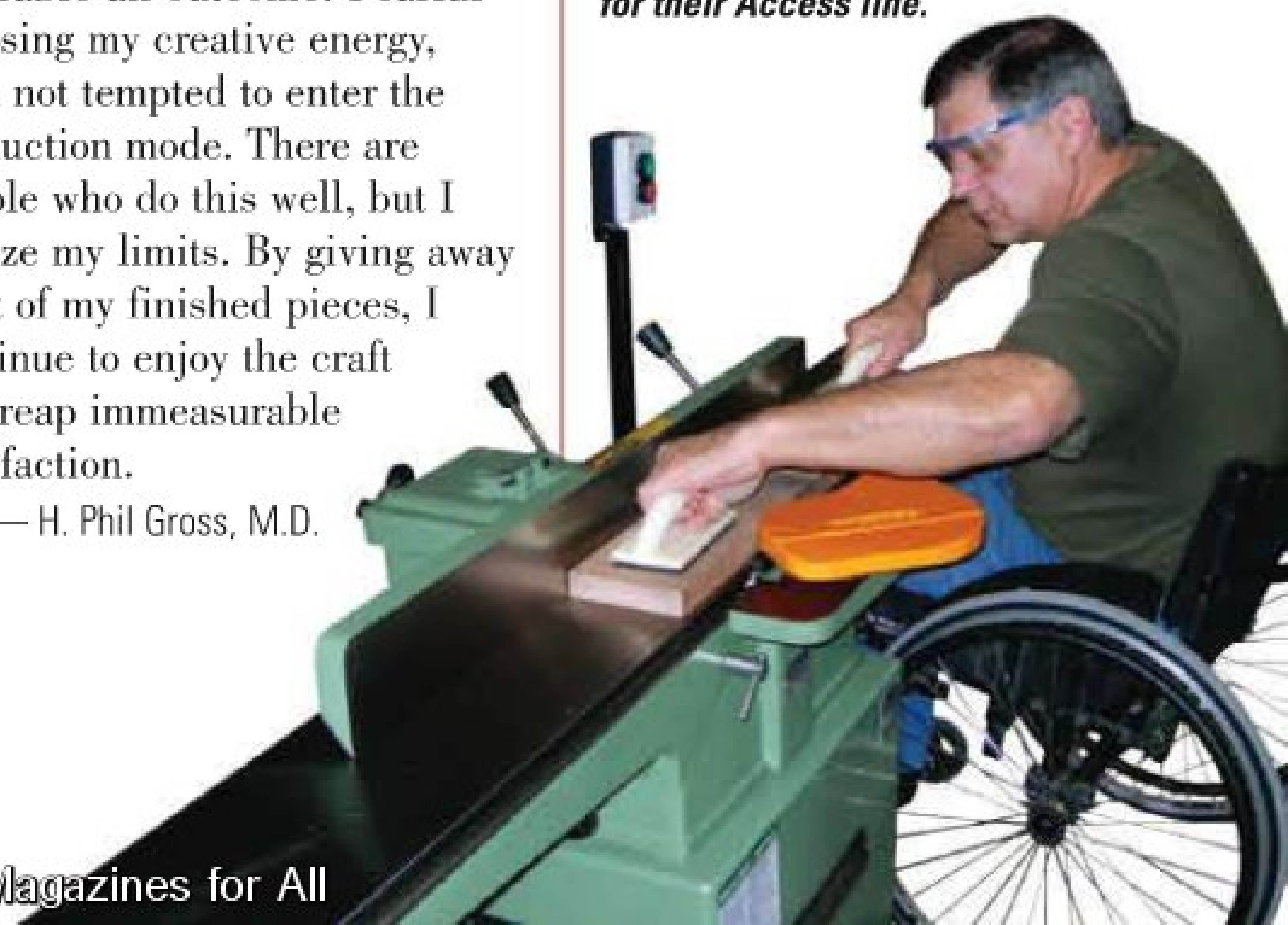
Tool Access

The Access by General line of woodworking machinery customized specifically for woodworkers in wheelchairs was conceived just two years ago. "After a year or so of hearing these kinds of questions come up at trade shows and other venues, we asked ourselves why no one is making machinery for people in wheelchairs," Norman Frampton, General's director of marketing and communications, recalls. "It occurred to us that maybe we should be one of the first companies to do it."

The company launched the Access by General line with five machines: a 10" tilting arbor cabinet saw, a 16" x 42" lathe, 15" drill press, 8" jointer and a 15" wood-cutting band saw. "Our goal was to cover the basic machines for furniture-making. The only machine we

Shop Talk continues on page 24 ...

As Baby Boomers age, General foresees an expanding market for their Access line.



Shop Talk continued



"JalaPENo on a Cloud" by Dee and Brian Kolakowski (Second Place)

"Parabola Pencil Holder" by David Short (Member's Choice)



"Abanico Bookend" by Seth Rolland (First Place)



"Computer Riser with Fan and Drawer" by Amy Gilron



"Desk Caddy" by John Sheridan

Woodworker's Desk Accessories Wharton Esherick Style

The desk accessories theme for the Wharton Esherick Museum's 17th annual woodworking competition came about in part because, "Somebody asked, 'What would Wharton have done with computers?'" said museum curator Paul Eisenhauer.

While only two of the competition entries focused on computers, the desk accessories theme and accompanying show, A Cure for the Common Desk, was still "something to have fun with," Paul said.

This year's competition, named for the early 20th century Pennsylvania wood sculptor, also included, for the first time, the Horace Hartshaw Award for a high school student. The first winner of this award, named for Esherick's assistant, was Sarah Anderson for her "Thumb Drive Letter Opener."

The theme for the 2011 competition is clocks; further information is available from the museum at 610-644-5822 or at whartonesherickmuseum.org.

"Thumb Drive Letter Opener" by Sarah Anderson (Horace Hartshaw Award)



— Joanna Werch Takes

Tool Access continued

don't offer at this time is a stationary planer, but planers are already at an acceptable height for most wheelchair users," Norman says.

The Access line consists of pre-existing models: four are made in the company's Drummondville, Montreal, manufacturing plant, and one is built overseas within its subsidiary General International line. In addition to modifying the

tools to change conventional work surface and tabletop heights, two other big issues to resolve were safety and improved legroom. Power switches are relocated to make them operable from a seated position, and bases or columns were redesigned to accommodate a 22" to 24" seat height.

Currently, the Access line is priced the same as their

conventional model counterparts. Your local General dealership may even be able to help you get your new lathe or band saw unloaded and into the shop. "That's part of the reason why we choose to work with dealers," Norman

said. "They are able to provide that bit of extra service that might make all the difference in this situation."

— Chris Marshall

The table saw is the best-selling tool in the Access by General line of machinery.



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Shorter Open Time	✓	✓
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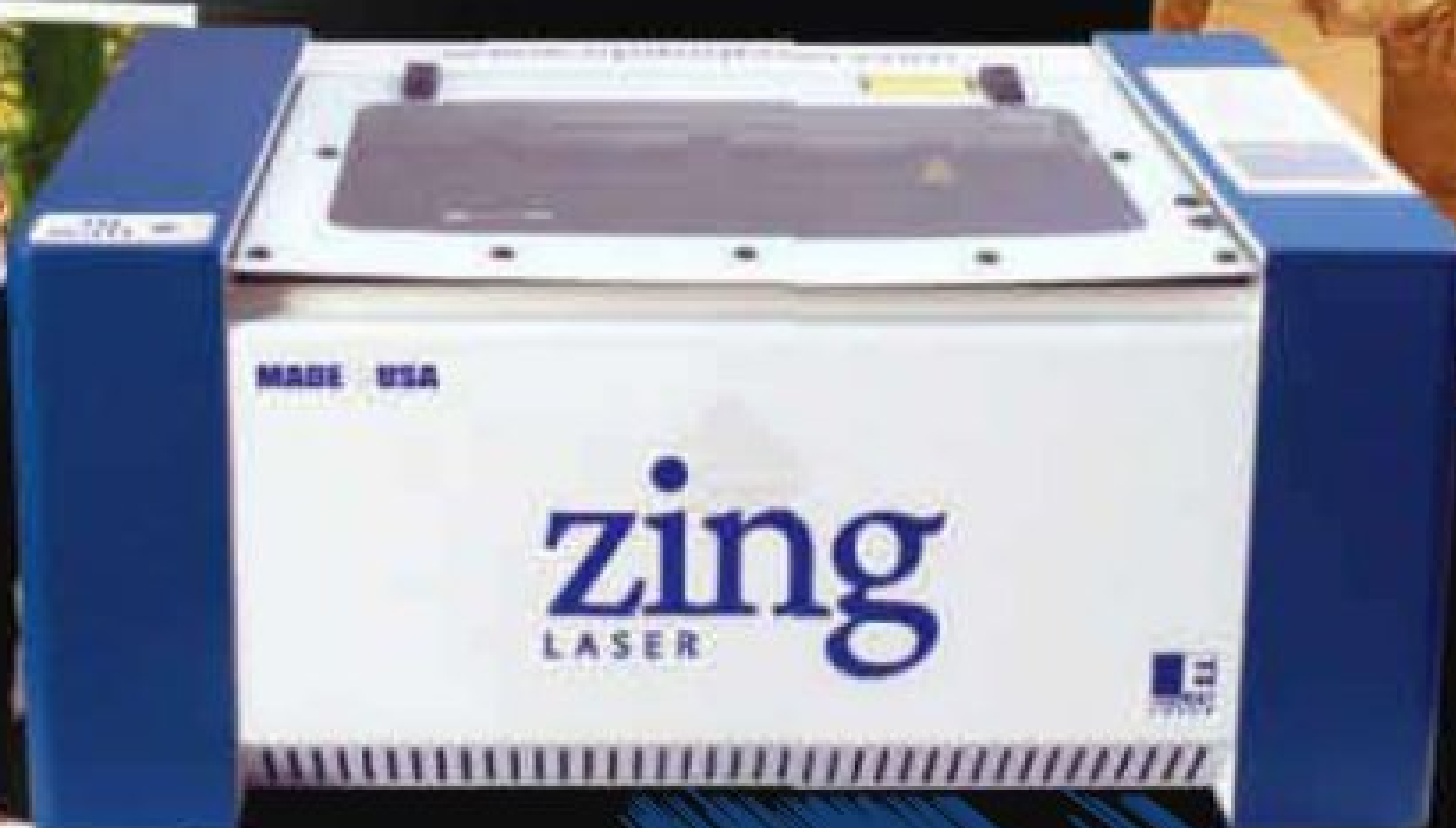
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Jigs & Fixtures

Benchtop Fixture for the Belt Sander

By Sandor Nagyszalanczy



With things the way they are with the economy, more and more woodworkers are looking to get the most use out of the tools they already have. So am I, which is why I created this simple base fixture that transforms a standard portable belt sander into a small horizontal benchtop sander. The fixture is simple to build and lets you use your sander to accurately shape, trim and smooth small parts safely.

To build the fixture shown in the *Drawings* on the next page, start by cutting out a base plate from 1/2" or 3/4" plywood or MDF that's 14" wide and 6" to 8" longer than the length of your belt sander. It's important to note that we're providing the actual dimensions of my jig, but you'll need to adjust them to fit your sander. Set your sander atop the base plate

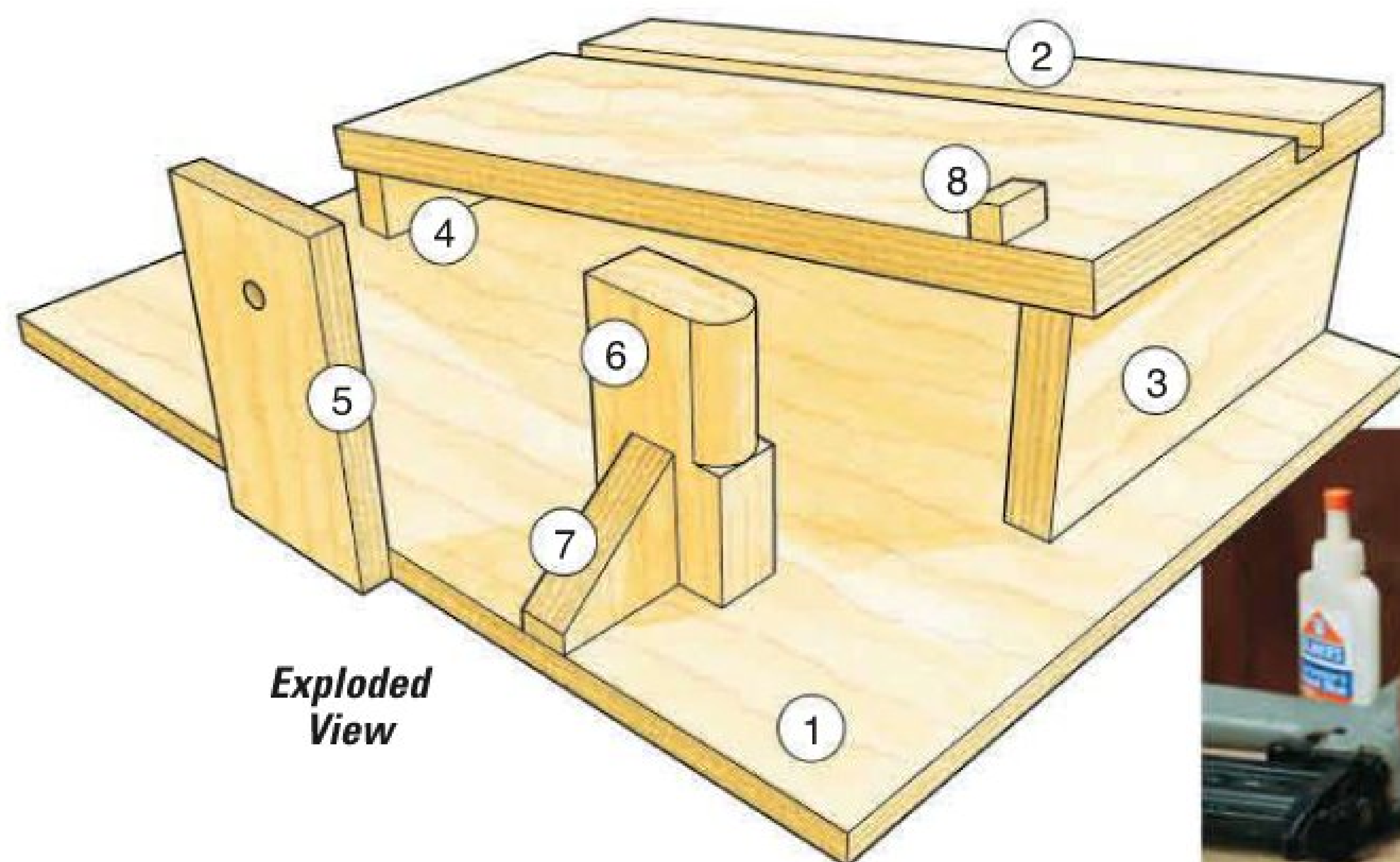


Use a large square to see if the belt's platen is square to the base. If it isn't, use blocks or wedges under the sander to square it up.

with the open side of the belt rollers facing up, and position the belt platen (the flat surface below the working part of the belt) parallel to the long edge of the base. Now square up the platen surface to the base plate (see photo above) using spacers,

wedges or shims under the body of the sander as necessary. Mount the sander to the base plate using any threaded mounting points your sander may have, such as a detachable front knob or holes for attaching accessories as seen in the photo on the facing page (top right). Make brackets from plywood scraps to suit the positions of the mounting holes, screw them to the sander, then glue them onto the base. For best stability, secure the sander in at least two places: one at the front and one at, or near, the rear.

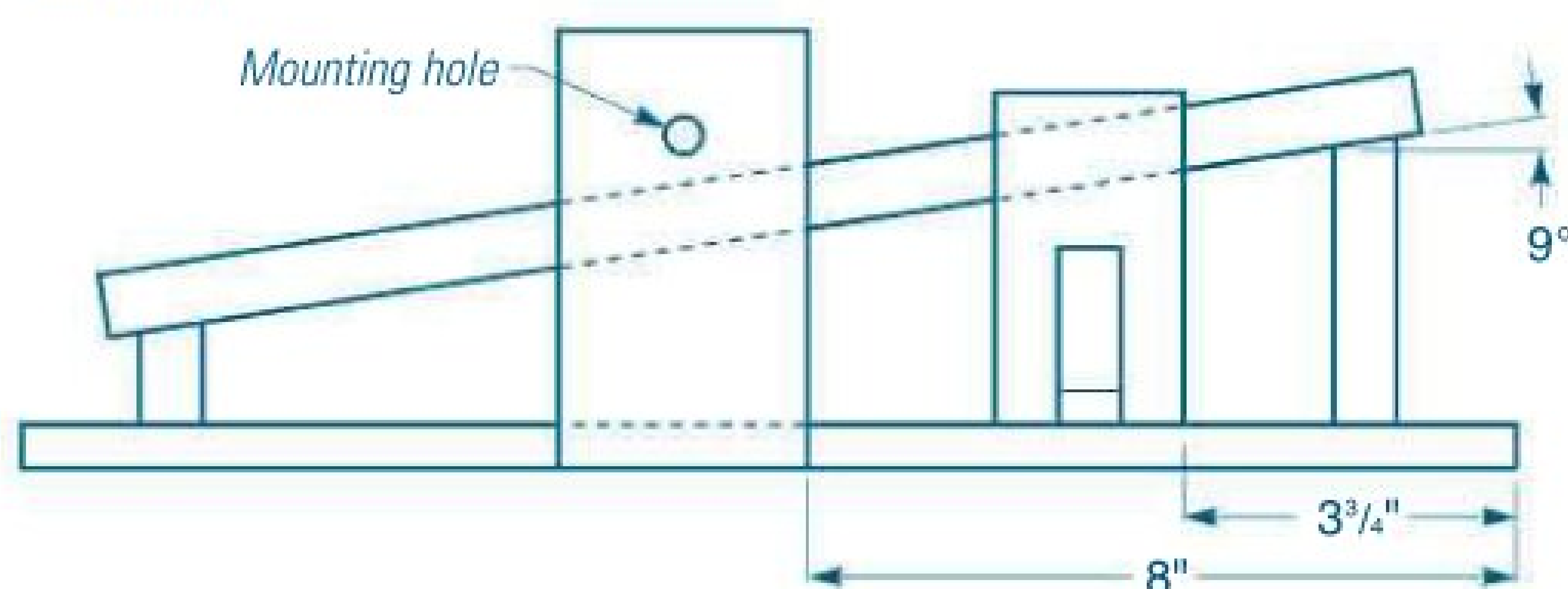
Cut the fixture's angled work table from plywood or MDF that's 8" wide and about 2" shorter than the base. If you wish, plow a miter slot into the table top using either a straight bit in a router or dado blade in a table saw. This slot lets you use a regular miter gauge or other



Exploded View

Belt Sanding Jig

(Back View)



Material List

	T x W x L
1 Base Plate (1)	1/2" x 14" x 18"
2 Table Top (1)	3/4" x 8" x 16"
3 Tall Table Support (1)	3/4" x 3 1/2" x 8"
4 Short Table Support (1)	3/4" x 1 1/4" x 8"
5 Mounting Plate (1)	1/2" x 3" x 5 1/4"
6 Handle Mount (1)	1" x 2 1/4" x 4"
7 Handle Mount Brace (1)	3/4" x 2" x 2"
8 Stop Block (1)	3/4" x 3/4" x 1 1/2"

miter-slot-guided jigs or devices with the fixture to accurately sand square or angled edges.

The table is designed to be higher at the rear end of the sander: it reduces chatter during sanding and distributes wear more evenly across the belt. Size the table supports so the table's top is slightly below the bottom edge of the belt at the low end and 1" to 1 1/2" below the top edge of the belt at the high end (center photo at right). Glue and screw the supports to the underside of the table. Then, screw the table supports to the base from underneath, leaving a minimal gap between the belt and table. Finally, screw a small stop block to the table near the rear end of the belt, to keep small parts from being thrown off the table top by the force of the running sander (bottom photo at right).

As shown in the large photo (above left), before using your belt sander fixture, clamp the base plate to your bench top. Use your belt sander's trigger lock to keep the tool switched on while you sand.

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

Note: Dimensions provided are based on the author's belt sander. You'll have to make adjustments based on your tool's size and shape.



The removable top knob handle on this DeWALT belt sander is used here to fasten the tool to the base, via a mounting plate.



Reinforce the glued-up parts for the fixture's table together with a brad nailer. The angled table helps keep small parts put during sanding.



A small stop block screwed to the table top prevents workpieces from being thrown backwards by the force of the belt.

Three Tenets of Good Design

By Ian Kirby

Teaching woodworkers to design their own projects is a complicated and daunting task. To start the process, our author focuses on the three most important aspects of design: proportion, proportion and proportion!



Proportions of the Site: A wall-hung bookcase's proportion is a part of a larger site. Its task in this case is to hold the author's cookbooks of a certain size, which affects its proportions as well.

Furniture can be made of many different materials. All furniture, wooden included, can be divided into two broad groups, generally referred to as case goods and stick furniture. Case goods are those things which have doors and drawers — storage furniture. Stick furniture is tables and chairs.

The difference between them visually is that case goods present us with a solid cuboid object. Tables and chairs are made up of legs and rails that have spaces between them. It is a difference that brings considerable complexities, each of its own kind.

To help put this admittedly difficult topic

of design into a practical context, the piece I'm going to use as an example is a wall-hung open bookcase. Readers who have been with the *Journal* for a while will perhaps recognize it from the October 2007 issue. It falls nicely between the cracks of these two broad groups because it's not a closed box, but neither has it any parts that enclose an open space.

This piece also raises a difference between the projects that you make as a furniture maker and bought furniture. Your work, in all but rare instances, is site specific, which means that it is composed and made for a room or a particular place in a room where it will live. It is often subject specific as well, meaning that you are making a piece not only for a specific location but also a specific use in that location.

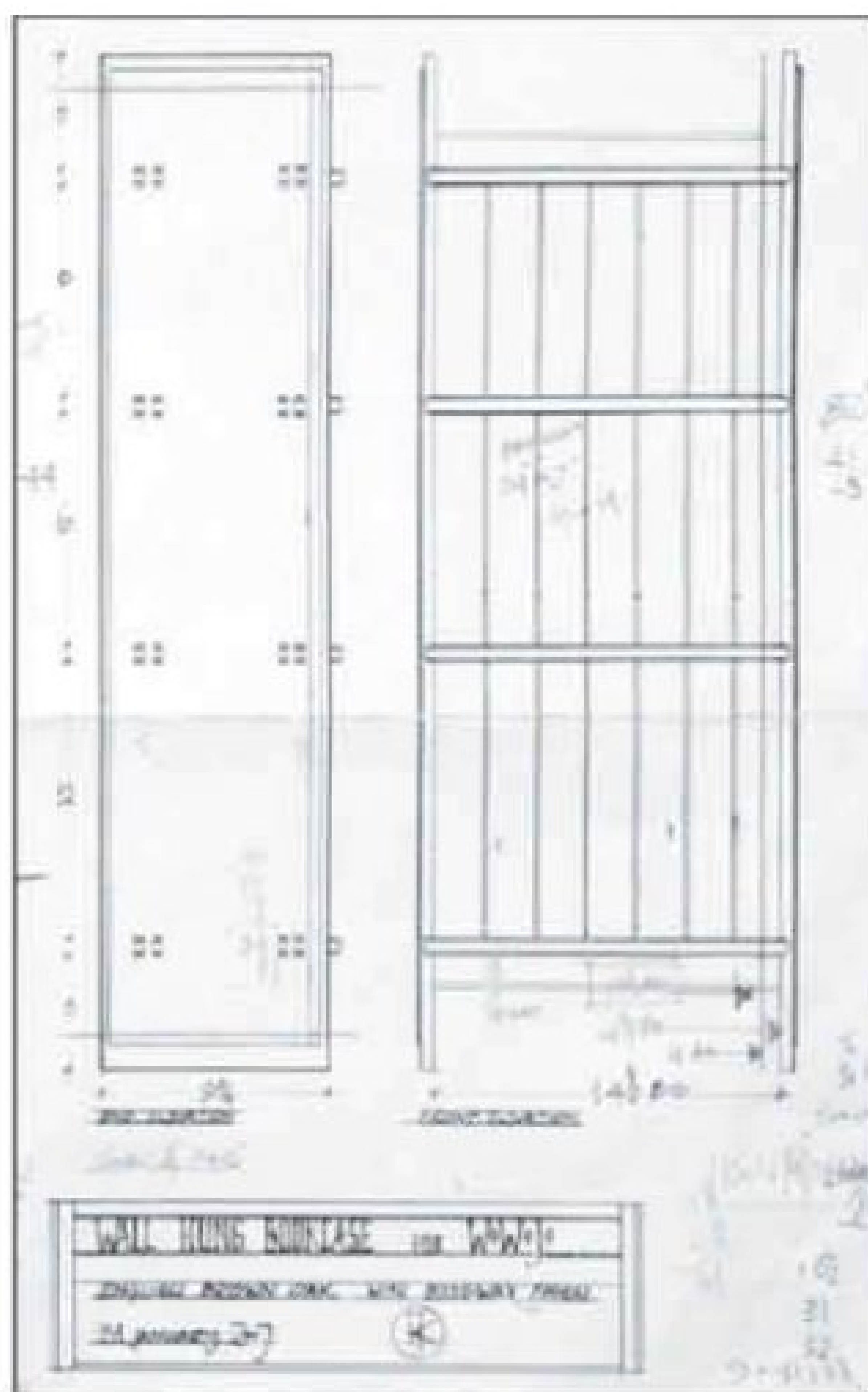
So it is with this bookcase. It's both site and subject specific since it is adjacent to the kitchen and intended for cookbooks of mostly large and medium size.

The Primary Consideration

Regardless of all other visual considerations, one is paramount — a first principle of furniture design, if you will. And that is proportion. It is the single most important aspect of any piece of furniture to which you should pay attention. To parody the mantra of real estate agents, furniture is about proportion, proportion, proportion.

That doesn't mean there is anything absolute about proportion. What it does mean is that every set of major dimensions, as well as every detail, has to be considered in the context of proportion.

You may well ask, "explain proportion." The easy and countable explanation is that it is a quantity of something that is part of a whole amount or number. Less simple is the uncountable explanation that it is the relation of one part to another or the whole with respect to magnitude or



Proportions of the Object: The original drawings for the bookcase include these front and side elevations. They are the first step in developing the proportions of the project.

degree. Unfortunately, understanding that sentence does not bring with it the ability to judge proportion. What I'm going to do, therefore, is go over this project in some detail regarding its various proportions in the hope that it will help guide you in your own efforts.

Examining the Piece

Looking for the first time at a piece of furniture should be an act of discovery. From a distance, the piece makes statements of its parts and their proportion. Viewing it from the middle ground reveals more prominent details and, close up, we find the minute details.

The front elevation of the bookcase (see *Drawings* above) has five parts to it: three spaces which have backs to them (for books) and the spaces top and bottom which show the wall. By the nature of the case, the spaces are all the same width. The top and bottom spaces are equal in height. The shelf spaces reduce from 12 to 10 to 9 inches as they go up.

At first glance, this elongates the effect as well as offering a more comfortable look than equal spaces — which would firmly announce a strict regimen with no concession to the subtle though comfortable diminishing dimensions.

The shelf spacing is emphasized by two details that you see from both the front and the side. The first detail is the projection of the shelf beyond the edge of the case, and the second is the line of

Proportions of the Joints: The proportions of the moldings (expressed in the top photo as a successive series of rabbets) provide shadow lines that shape the piece. The shape and size of the through tenons have their own proportions and effect on the whole. On the shelves, rabbets provide a more slender look and serve as moldings, creating highlights and shadows.

through joints. Each plays its part differently, yet they are clearly combined (see photos at right).

It is in the middle ground of this piece that you notice that the shelves project in two ways. They come forward off the sides and overlap the edge of the sides. As well, they have a rabbet on their projecting edges and ends. Each dimension of these details should be considered as a proportion judgment. The net effect of the rabbets is to give a more slender look to the shelf thickness. It does one other thing. The rabbet is a molding.

All moldings, simple or complex, have the effect of creating highlights and shadows. That's what they do, and that's why we use them. When you look at a molding, you may not be able to immediately visualize its section, but you will see its effect in the highlights and shadows it makes. Such is the case on the front edge of the sidepieces that have a double rabbet all around. They make the edge slimmer, at the same time emphasizing it.

The projection of the shelf leads your eye to the through joints — “the close-up” detail. The positioning and size of these are a good example of proportion at work. The through tenon, like the through dovetail, presents an opportunity to exhibit the skill and workmanship of the maker. Designing the joint to be strong



enough for its purpose isn't a problem. Your decision as to what comes “through” and what doesn't is called the “layout” — a vital consideration with a through joint. A superbly executed through joint with an unflattering layout is still, in the end, unflattering.

The sort of decisions you have to make in the layout of these joints are numerous. First, how many and where across the piece should they be? You could have chosen three singles, edges and center. I chose two twins. Then, how far from the edges does the first joint come? What width to make the mortise? For me, it is dictated by the mortise chisel width. Then, how much space between the mortises, which is affected by how much space between each pair of joints.

And this just starts the process. In my next article, the discussion of proportion will continue, with a few more points to consider before you start building.

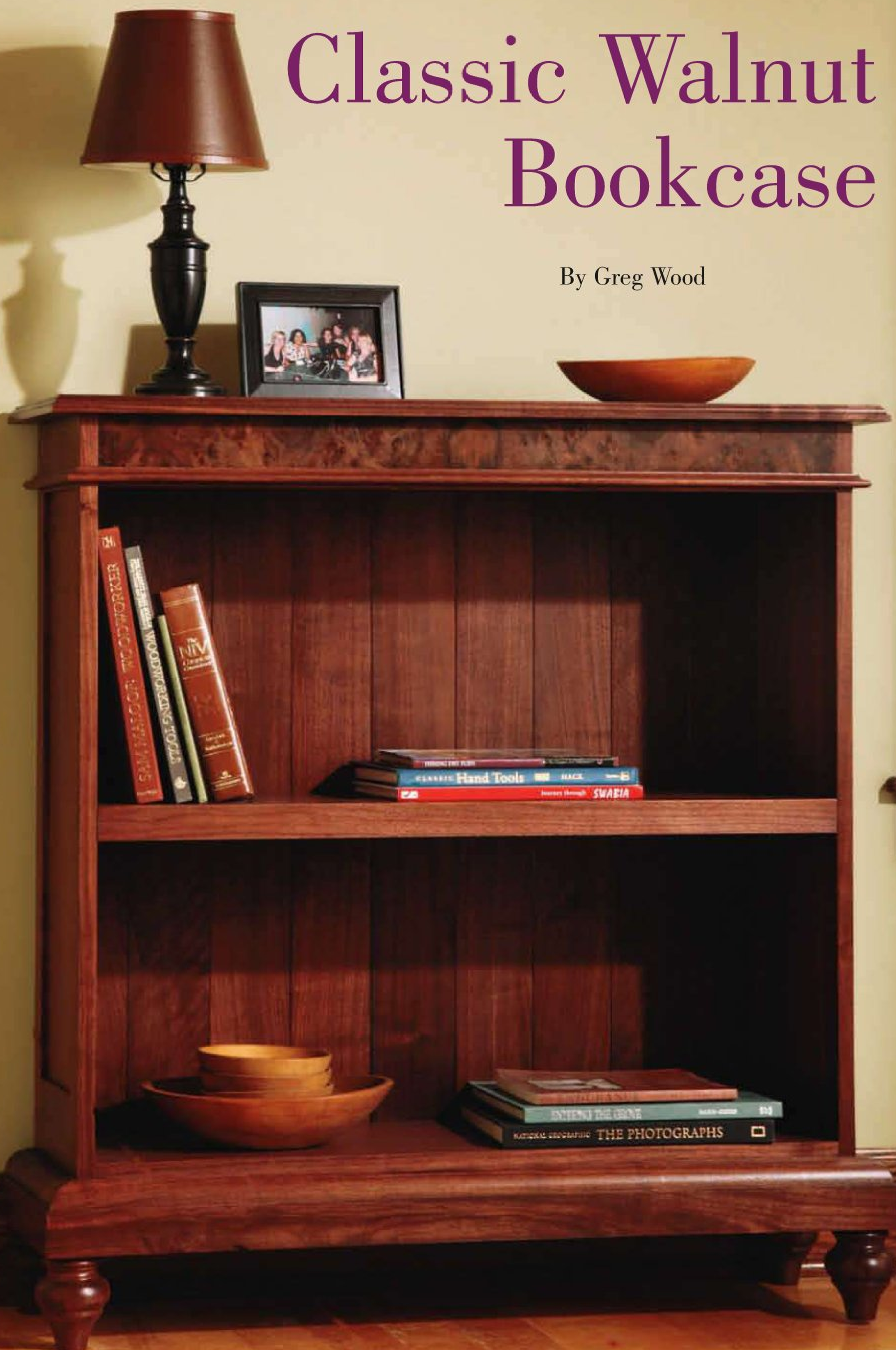
First in a Series: *The Journal* recently conducted a survey and discovered that over 90 percent of woodworkers would like to learn more about “how to design their own projects.” Our longstanding relationship with Ian Kirby presented us with the perfect person to take on that task. Ian is more than qualified. In fact, one of his several degrees is a National Diploma in Design in Furniture from Leeds College of Art in England. In 1976, he opened his own school of Furniture Design and Construction in North Adams, Massachusetts.

— Rob Johnstone

Classic Walnut Bookcase

By Greg Wood

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A classic design, built with traditional wood and some tried-and-true joinery techniques, adds up to one beautiful heirloom furniture project.

Casework projects are not exactly my bread and butter. Although I have been making my living as a woodworker for more than 30 years, my focus has always been more in the area of chairs and dining room tables. (I actually built a nice little bench for the *Journal* (well, it was *Today's Woodworker*, before they bought the *Journal*) way back when publisher Larry Stoiaken was still serving as editor. But when current editor Rob Johnstone called me recently and asked if I was interested in building this little bookcase, I thought it would be a good change of pace. Art director Jeff Jacobson brought me the drawings and, after studying them carefully for a while, I was able to kick the project off.

A Series of Subassemblies

It would be really hard to think of a more classic project than a walnut bookcase, and this one is traditional — even down to its joinery. But, as you'll see later, I do add a twist or two that makes the whole thing a bit easier to put together. All in all, though, there is nothing really tricky about this project.

As with most of my furniture pieces that are made entirely from solid lumber, my first tasks were determining which pieces of stock would go where on the finished bookcase, and then gluing up narrow boards to make the flat panels.

Fortunately, I had a long, nicely figured board in 1/2" thickness that was wide enough to make the side panels without butt joints. (Again, I took considerable care selecting this stock, because the panels are a major visual component in the bookcase.) After I rough-cut the pieces to length, I machined them down to their proper size on my table saw. If you will have to glue up stock for the side panels, try to make sure that you match the grain pattern across the glue-up as well as you can to blend the glue seams.

When it came to the top, shelf and bottom, I did need to glue up stock sufficiently wide to create those pieces. So I took the time to prepare stock and glued up butt-joined panels for each of these "show" pieces. This entire bookcase is made from solid walnut lumber, with the exception of the bottom stringers (which I made from some thick oak stock I had set aside in my shop for just such a situation). You could substitute walnut-covered veneer sheetstock for any number of the parts if you'd like ... but I prefer the look and feel of solid hardwood, and in a project of this size, you would not likely realize significant cost savings by using the sheetstock. You can find all the dimensions for the various parts in the *Material List* on page 37.

I set the side panels — along with the three clamped-up pieces I just mentioned — aside for now and moved on to making the stiles and rails, which I constructed from 3/4"-thick stock. After cutting them to width and length (remember to factor in the length of the rail's stub tenons in this calculation), I needed to machine grooves and tenons. Once again at my table saw, I outfitted it with a dado head to plow grooves in the center of the appropriate stile and rail edges. To help control the cut, I used a shop-made featherboard in this operation (see photos, page 35). Then I placed my big crosscut sled on the table saw (keeping the dado

Dark walnut lumber, with subtle red highlights, provides a classic look to this bookcase. The purchased bun feet are a traditional detail as well.



This walnut bookcase is traditional — right down to its joinery. But, our author added a twist or two that makes the whole thing easier to put together.

blade in the saw) and raised the tenons on the ends of the rails — taking care to fit them to the grooves I had just formed. Once the stiles and rails fit together properly, I needed to chop a couple of mortises into the stiles. I used my old mortising machine to chop the openings. When I make mortises like this with a machine, I always start the process in the middle of the mortise and move to either side. I believe I get better results as the cutter does not deflect during the cut this way. These mortises are open at the top of the rail so they will accept both the veneered front stretcher and the lower stretcher that sits just below it. They both slide down into the same long mortise. See the *Drawings* for more details.

With that done, I grabbed the two side panels and got to work machining them to fit into their respective frames. Once again I used my trusty table saw, in this

case to form a rabbet all around the edges of the side panels. The joints are formed such that the panels fit into the stiles and rails so their inside faces are flush. (Later, when mounting the shelf into the bookcase, it will make perfect sense why I did this.) Once again, you can check out the *Drawings* for details. One important note: because they are made from solid lumber, the panels must have room to expand and contract seasonally within the frame. I test-fit the components of the side subassemblies, and once I was satisfied that everything was well and proper, I glued and clamped them together, allowing the panels to float within the frames. When the glue had cured, there were just a couple more pieces of machining to get through. I formed shallow rabbets on the back edges of each frame-and-panel side assembly into which the outermost back slats fit.

There is also a stopped rabbet right at the bottom of each side assembly. I cut this rabbet with a handheld router guided by a straightedge. I needed to square up the stopped end with a sharp chisel, but that was easily accomplished. With that hand work done, I set the machined sides aside.

Making the Bottom Assembly

After taking the panels that I had glued up to make the top, bottom and shelf out of their clamps, I moved on to building the piece from the bottom up. Starting with the piece that would become the bottom, I cut it to size on the table saw. Important details on the bottom are the notches that correspond to the stopped grooves on the frame-and-panel sides and the rabbet for the back slats. I cut and fit the notches carefully, testing them in the side panels, rather than doing this later. Then I formed the rabbet along the back edge of the bottom.

It's important to note that the bottom is a key part of the lower subassembly, which also includes three thick moldings, two stringers and two stretchers — all of these pieces are structural.

I got going by cutting the molding stock overly long (enough to make the side and front molding pieces) and to its proper width and thickness. Then I chucked a beaded roundover bit into the router table and took several passes to shape the stepped roundover on the top edge of the molding (see the photos on page 38). I like to take a very scant final cut on molding like this ... it reduces



Chopping the mortises with his dedicated mortising machine, the author prefers to start with the innermost cut, working his way out. This helps to avoid bit deflection.

tearout and leaves a really smoothly cut surface. With that done, I machined the stringers and stretchers.

As you can see in the *Elevation Drawings*, I used pocket holes bored into the stretchers to join them to the stringers. The order of assembly was: first, attach the stretchers to the stringers, then attach the bottom to this subassembly (put a bead of glue on the top edge of the front stretcher).

Next, I used my miter saw to cut the base molding pieces to size. They wrap around three sides of the base with mitered corners. Using glue and screws, attach the base moldings to the stretchers and stringers and allow the glue to cure. I quickly wiped away glue squeeze-out with a wet cloth.

Now a word about the feet. These bun feet match the style of the bookcase very well and are easy to install. I ordered my walnut feet from Osborne Wood Products (osbornewood.com) rather than trying to stain another species to match the rest of the stock in the bookcase. I think it's worth the extra time and money.

Moving to the Top and Back

There is an internal frame at the top of the bookcase — unseen in the completed unit — that helps hold the top together and to which the back slats are mounted. Because it is hidden, I once again used screws to assemble the frame cleats.

The back slats are shiplapped so they can overlap one another as they go across the back of the bookcase. It is a very traditional way to build a solid wood back that takes into account its expansion and contraction. Note that the center slat has two rabbets on the same face, while the remainder have the rabbet on the opposite faces. These back slats are actually pretty visible from the front of the bookcase, so I took time to compose them in an attractive manner. With the back slats and the upper frame completed, it was almost time to do some more major assembly ... almost. First there was some sanding to do. It is much easier and more efficient to sand these components before they are assembled. I took them right up to 180-grit.



The author used a table saw with a narrow dado head to plow the grooves in the stiles and rails. His shop-made featherboard helped keep the stock tight to the fence as he made the cut.



The author used his large crosscut sled to form the tenons on the rails, gaining additional accuracy and repeatability by clamping a stop block to the jig. As can be seen from the position of his hands, this approach also significantly increases the operation's safety.

Back Slat Assembly

(Top View)



After test-fitting all the parts, I glued and clamped the side subassemblies to the base, then glued the top frame in place. I also used screws to help secure the frame to the side subassemblies. It is important to square up the bookcase at this step.

I measured the inside dimensions of the case and carefully cut the shelf to size, allowing for the thickness of the shelf front. I also sliced a narrow groove in each end of the shelf, to accommodate the hidden shelf support pins. (See the *Drawing* below for more details.) When that was done, I cut the shelf stiffener to size and glued and clamped it to the shelf, setting the assembly aside until the glue cured.

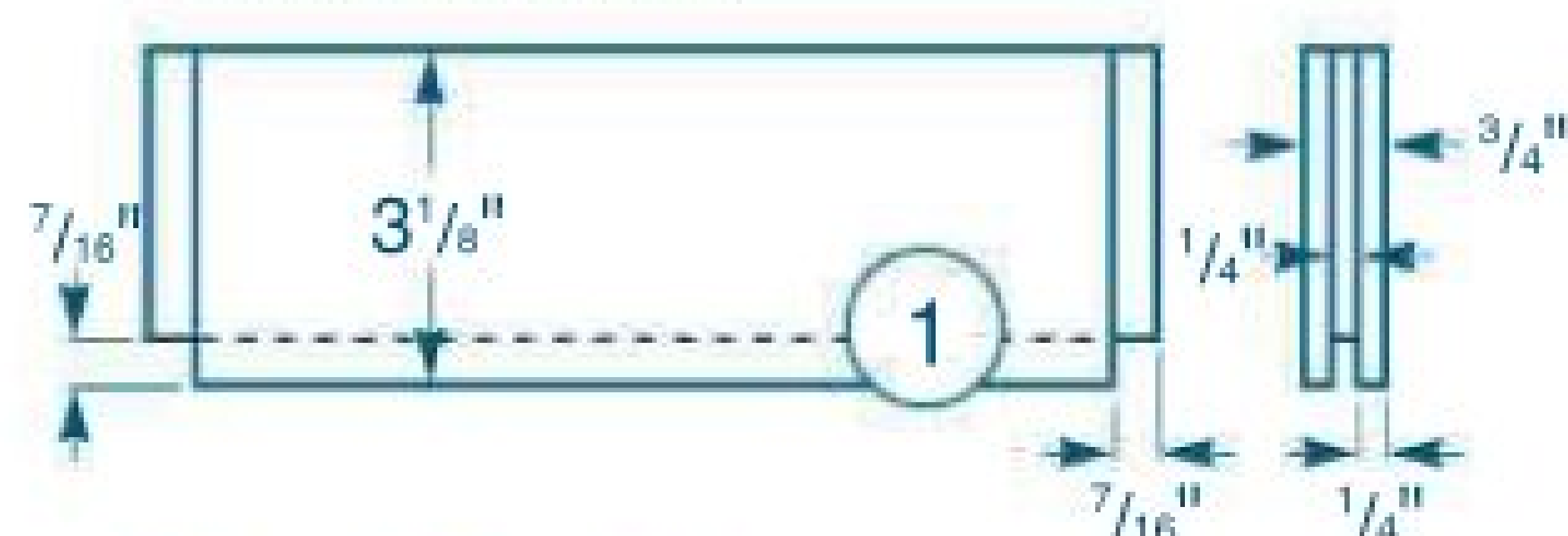
A Veneered Accent Strip

One detail that gives this bookcase a truly “classic” feel is the burl veneer glued to the upper stretcher that runs across the front of the piece. If you are thinking of building this piece but are uncomfortable with the practice of veneering, you could always skip this step and use a really attractive piece of solid walnut. But this sort of veneer work is not hard, and it might just help you to become more comfortable with this truly handy technique.

I cut the upper stretcher to size from a piece of solid walnut and milled it about 1/16 inch under 1/2 inch thick to accommodate the added thickness of the front and back

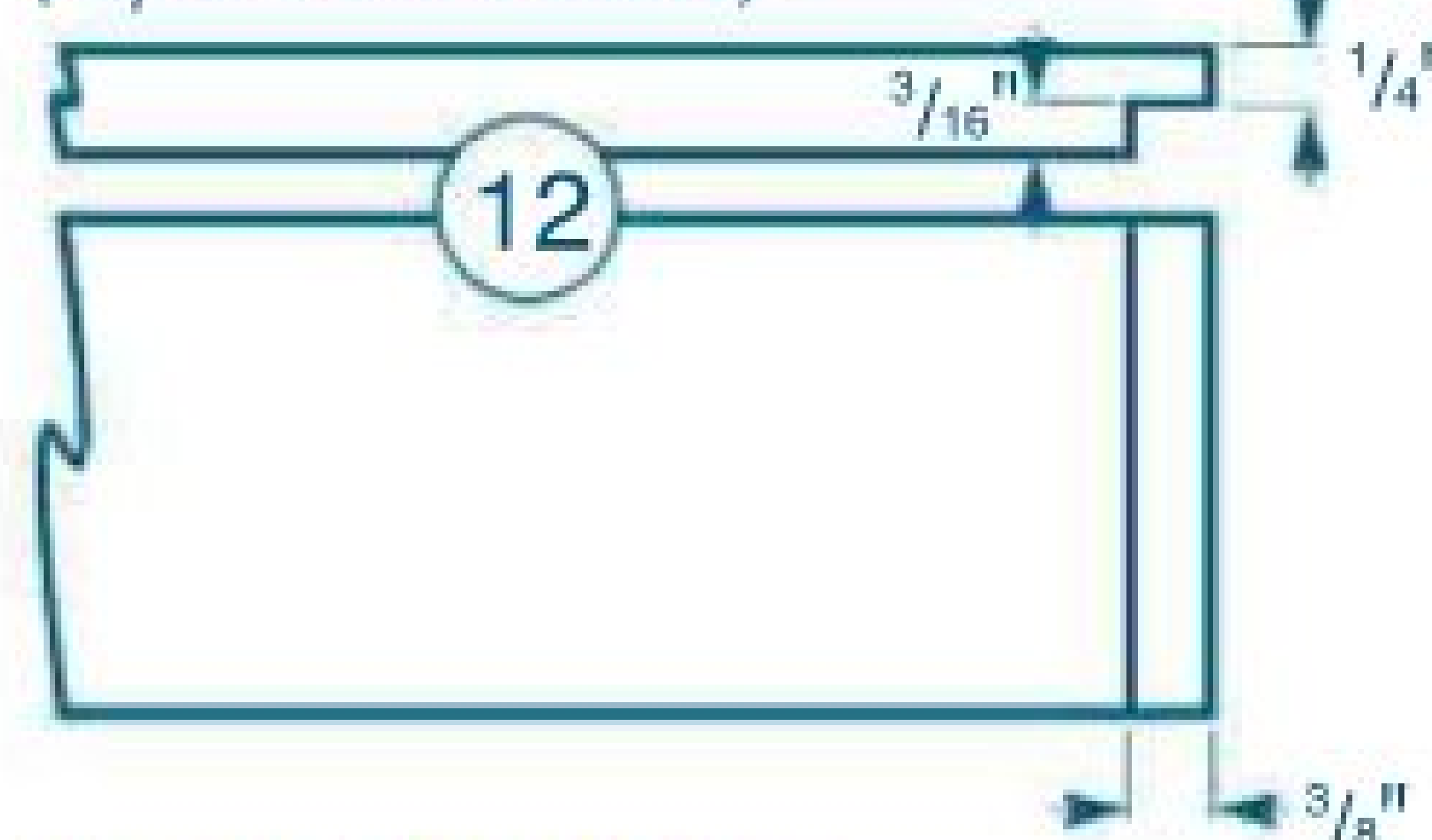
Top Side Rail

(Front and End Views)



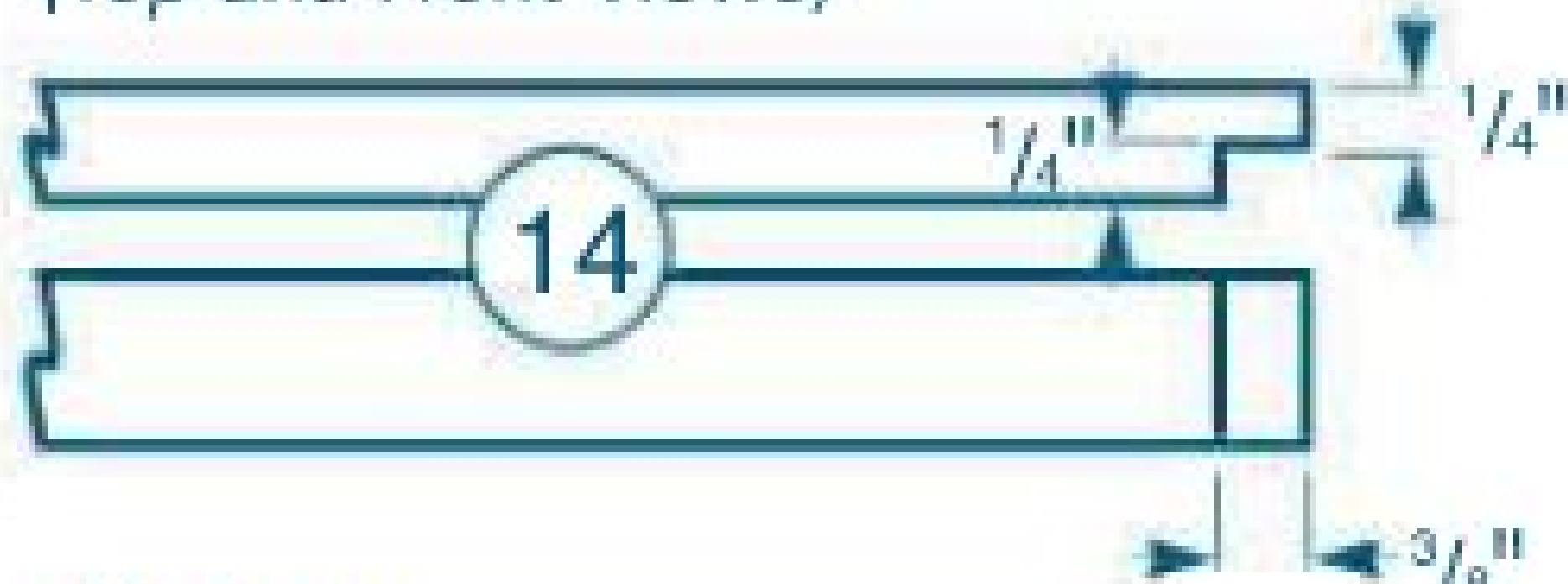
Upper Stretcher

(Top and Front Views)



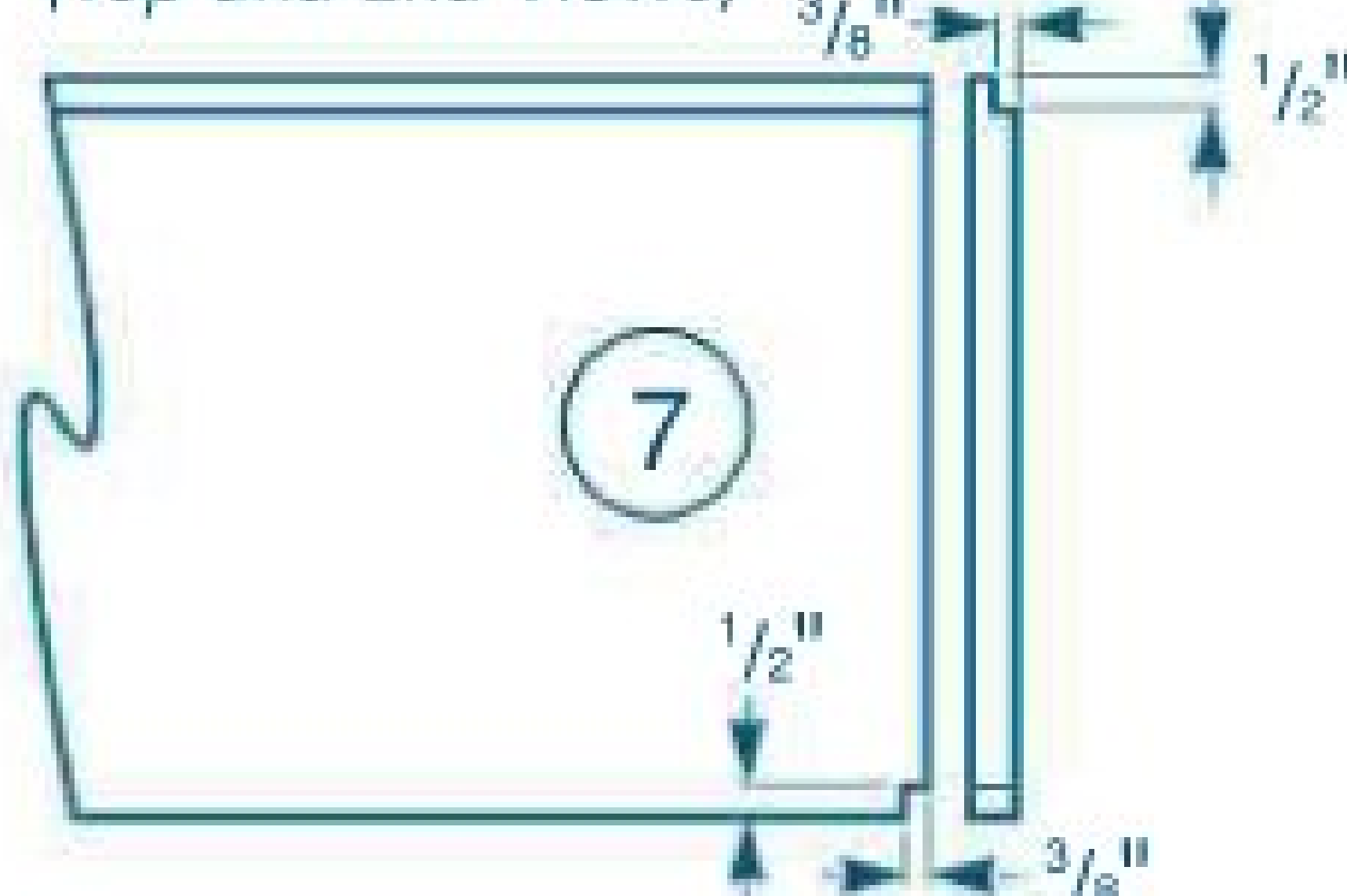
Lower Stretcher

(Top and Front Views)



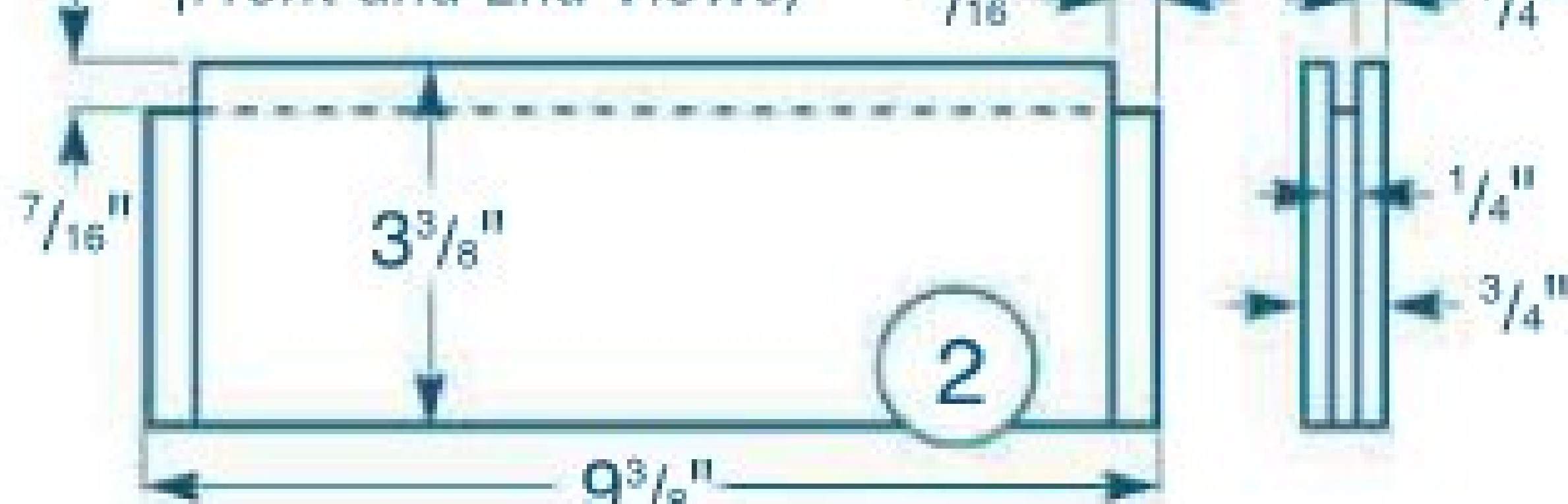
Bottom

(Top and End Views)



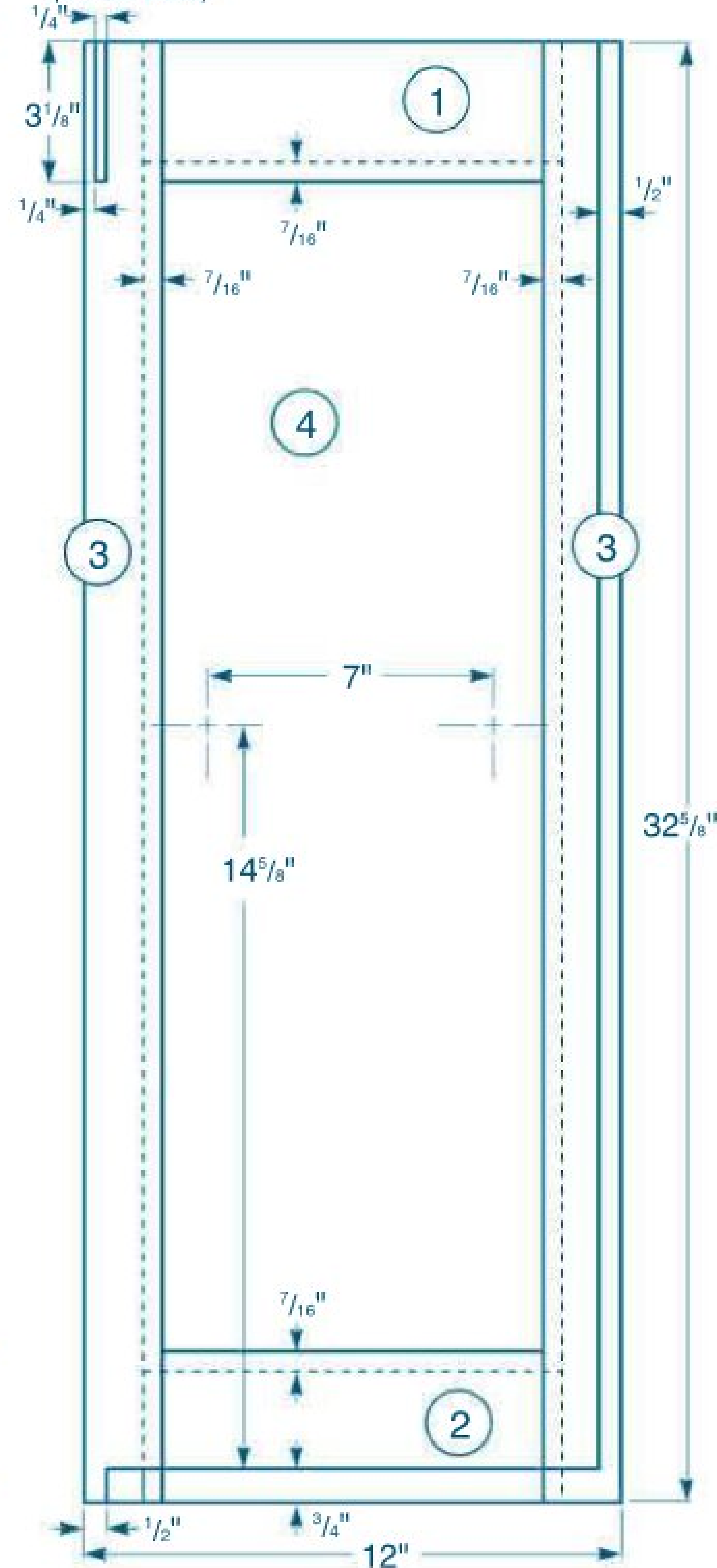
Bottom Side Rail

(Front and End Views)



Side Panel Assembly

(Inside View)



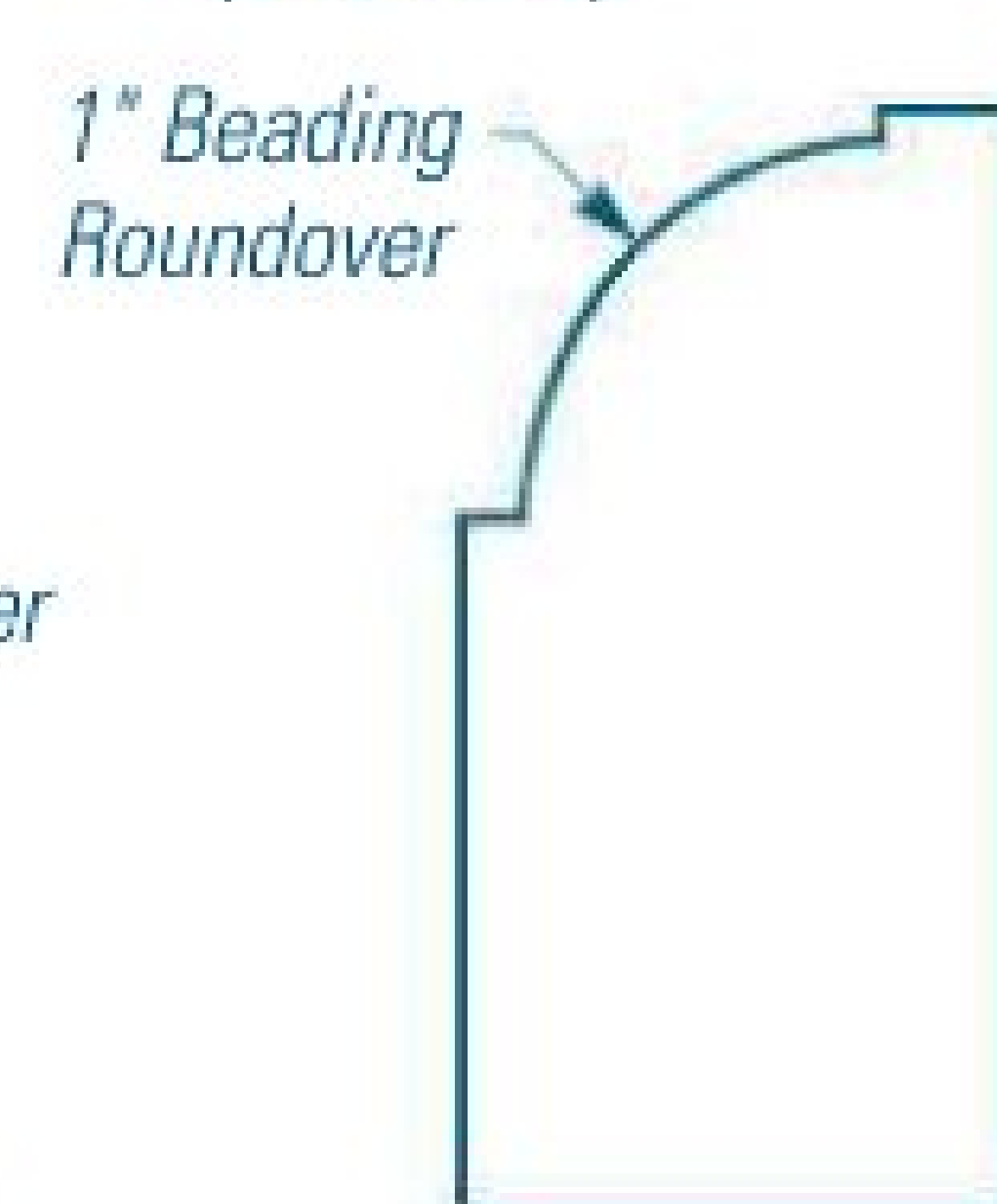
Trim Molding

(End View)



Base Molding

(End View)



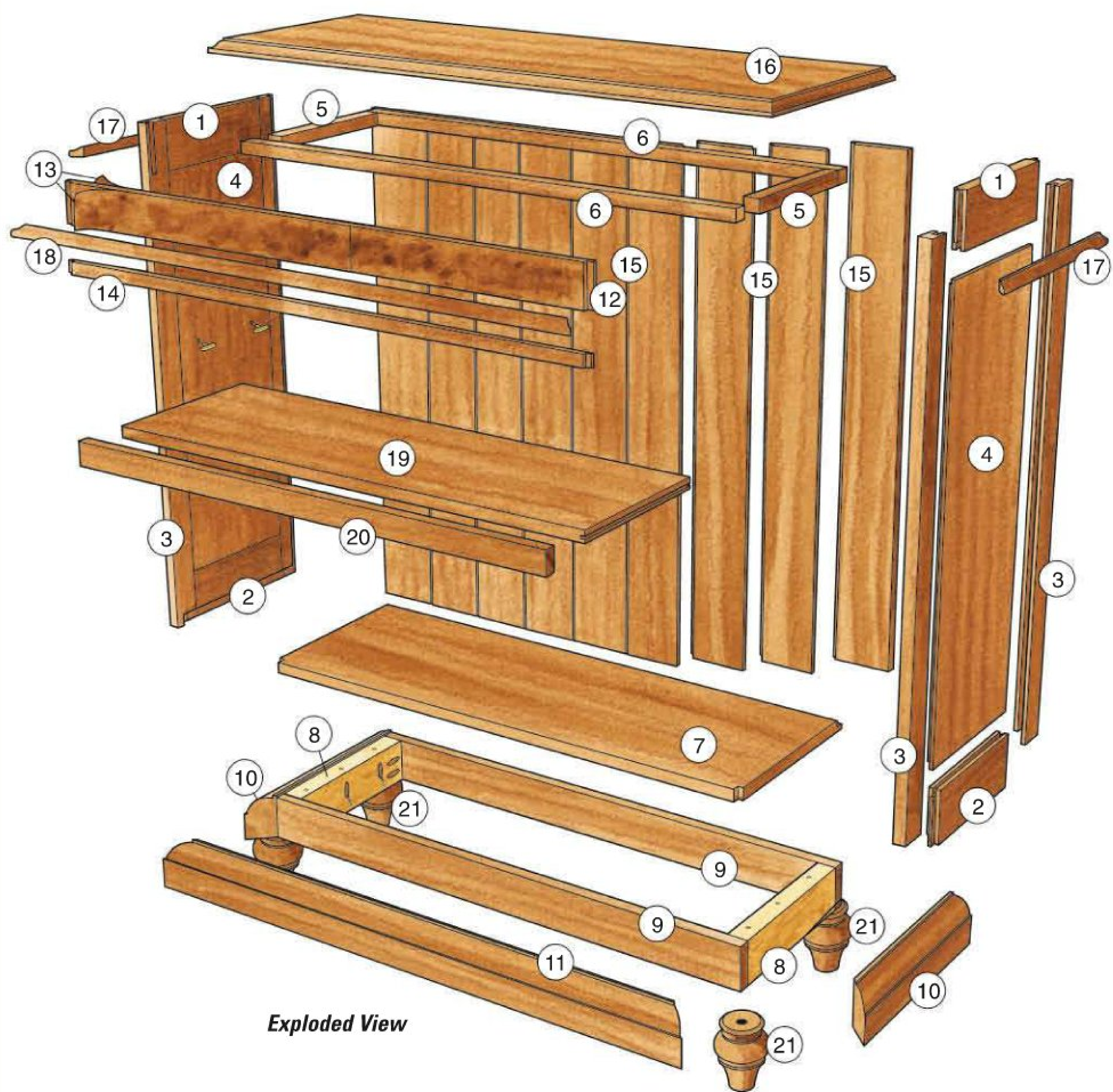
Shelf

(Front View)



Before clamping the frame and panels, the author made a block with a tenon on it to fill the mortises and prevent the clamps from breaking the stile.





Exploded View

MATERIAL LIST

T x W x L		T x W x L			
1	Top Side Rails (2)	3/4" x 3 1/8" x 9 3/8"	12	Upper Stretcher (1)	7/16" x 2 3/8" x 34"
2	Bottom Side Rails (2)	3/4" x 3 3/8" x 9 3/8"	13	Front & Back Veneer (2)	1/16" x 2 3/8" x 34"
3	Side Stiles (4)	3/4" x 1 3/4" x 32 5/8"	14	Lower Stretcher (1)	1/2" x 3/4" x 34"
4	Side Panels (2)	1/2" x 9 1/4" x 26 7/8"	15	Back Slats (9)	1/2" x 4" x 32 1/4"
5	Frame Short Cleats (2)	3/4" x 1" x 9"	16	Top (1)	3/4" x 13 1/4" x 37 1/2"
6	Frame Long Cleats (2)	3/4" x 1" x 33 1/4"	17	Side Trim Moldings (2)	5/8" x 5/8" x 12 5/8"
7	Bottom (1)	3/4" x 12" x 34"	18	Front Trim Molding (1)	5/8" x 5/8" x 36"
8	Bottom Stringers (2)	1 3/8" x 2 7/8" x 10 1/2"	19	Shelf (1)	3/4" x 10 3/4" x 33 1/4"
9	Bottom Stretchers (2)	3/4" x 2 7/8" x 34 3/4"	20	Shelf Stiffener (1)	3/4" x 1 1/2" x 33 1/4"
10	Side Base Moldings (2)	1 1/2" x 3" x 13 1/2"	21	Bun Feet (4)	Osborne #4045
11	Front Base Molding (1)	1 1/2" x 3" x 37 3/4"	22	Low Profile Shelf Support (4)	Rockler #22286



Rather than enlarge his inserts through hole with the oversized bit, the author clamped a 1/4"-thick piece of plywood on his router table. The completed roundover required several passes.

veneer. A piece of 1/2" plywood or MDF actually would have been better for this task, but frankly, I didn't have any on hand and was not going to buy a whole sheet of plywood to make a 2 1/2" x 35" strip! Next, I selected my veneer from a flitch of 6 or 7 pieces. (A "flitch" is several sequentially sliced pieces of veneer. Because they are very thin slices, the grain is nearly identical on each of the pieces.)

Examining the veneer, I found a nice place to start my book-match, placed the stretcher piece on top of the veneer and carefully sliced around it about 1/4" oversize with a utility knife. (I used a fresh blade!) It is important to note that this piece will cover only half of the stretcher. Taking the next piece of veneer from the flitch, I located the same grain pattern and cut it to rough size as well. I

overlapped the veneer slightly at the center seam and used a small straightedge to slice a clean square cut where I would join the two pieces together to form the book-match.

With that done, I taped the veneer together, forming a long narrow strip that was just about a 1/2" wider and longer than the upper stretcher. (What kind of tape should you use? Veneer tape is the proper product for this task ... but again, I did not feel like buying a whole roll of it, so I used blue masking tape. It is not great for this task, but it worked for me.)

I put some newspaper on my workbench to catch the glue drips. Then I applied a coating of regular wood glue (white or yellow, it makes no difference) to one face of the stretcher and the non-taped face of the veneer. A thin, smooth coat of glue is required. If, as happened

to me, the veneer fractures (burl is notoriously fragile), just carefully tape it back together and keep on going. The good thing about burl is that its exceedingly wild grain will hide a few little imperfections, and they probably will end up not being noticeable.

I allowed the glue to dry completely and, while that was happening, I dug out my clothes iron. The iron, set to its hottest temperature, is used to push the veneer down on the substrate. The heat from the iron activates the glue, and it sticks in place instantly. One important point: once that hot iron hits the veneer, you can't move the veneer side to side or up and down on the substrate, so I make dead sure that I have it exactly where I want it when I start this process. Press the iron down along the whole length of the stretcher to secure the veneer. I again used the utility knife to trim off the excess veneer. Then I repeated the veneering process on the back of the stretcher. (If the stretcher had been made of plywood, I would not have felt the need to put veneer on the back of the stretcher. Because it was made from thin, solid wood, I chose to balance the layers to keep it from distorting.)

Walnut burl veneer helps create that classic walnut bookcase look. The author used a very simple "iron-on" technique to attach the veneer to its substrate.



Red mahogany oil stain (left) added colorful highlights to the walnut lumber — popping the grain nicely. Above, the ends of the shelf (turned around so you can see the back) have a groove sliced into them that slides over the winged shelf pins.

At this point, I raised the tenons on the ends of the upper stretcher, fitting it to the mortises I had chopped earlier. I also made the lower stretcher and machined its tenons at the same time. When they fit well, I glued and clamped them in place. (I did take the time to sand them before I attached them to the case.)

Adding the Top and Trim

The project was getting closer to completion with every step. I moved on to the top, which I had glued up earlier. Now I cut it to size and shaped the sides and forward edge with a Roman ogee bit installed in my router table. I tested its fit on the bookcase, and then set it aside. Following that, I made the trim molding. Because it is very narrow, I shaped the edge of a wider board first with an ogee bit in the router table and then followed that by shaping the bottom with a roundover bit. With that completed, I ripped the trim piece off of the board at my table saw. This method is far safer than working with thin stock on a router table. I cut the pieces to length, mitering them around the bookcase and then glued and clamped them in place. After the glue had cured, I mounted the top to the bookcase using screws driven up through the hidden internal frame.

After thoroughly sanding them, it was time to mount the back slats to the bookcase using one small brad nail through the center of each slat, top and bottom. I start-

ed with the center slat and worked outward. The last slats on each side required a bit of extra fitting. I glued the outside slats into the shallow rabbets on the back of each frame-and-panel side.

At this point I also attached the bun feet using small hanger bolts. They mount to the bottom stringers.

The last step in the construction process was to bore four holes for the shelf mounting system. (See the *Drawings* for the hole locations.) It was the first time I had used these little pins with the odd flat wings on them, but I have to admit, they worked pretty well.

Finishing went smoothly on this piece. Because I had taken the time to sand the pieces before I assembled them, the final hand sanding to 220-grit did not take too long. Now, some folks might think this is odd, but I find some walnut gets a bit flat and gray looking with just a clear finish. So, to combat that, I used a red mahogany oil stain to add red highlights to the walnut. Then I followed with three coats of clear poly. It looked great.

While I'm not going to get into full-time casework projects, this bookcase was an enjoyable change of pace for me. I hope that you enjoy building it and that it finds a fitting place in your home.

Greg Wood is a professional woodworker from Howard Lake, Minnesota. See his work at www.gregwoodfurniture.com.

The bookcase has shiplapped back slats that have enough space between them to allow for seasonal movement of solid wood.



Arts & Crafts Calendar Frame

By David Fowler

Frame your new year in style with this magnetized-back calendar frame. This Arts & Crafts piece can easily be modified to fit nearly any sized calendar.



JANUARY

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

The author's son, Matthew, at left, helped out with the "before" shot, featuring quartersawn white oak.

I started this Mission style calendar frame about 10 years ago, sort of. It began when a friend gave me a calendar with original artwork from Wolf Creek Printery. Knowing that I was a furniture maker, he only gave me the calendar, no frame. That was the first calendar frame I made — walnut, if I remember correctly.

Since then, I figure that it took me 10 years, a hundred calendar frames and the availability of rare-earth magnets to find my perfect attachment method for my calendar frame back panel. I use a piece of 20-gauge sheet metal and attach it using eight 1/2" rare-earth magnets. It works wonderfully, needs no tools, is easy to remove and has no moving parts (no levers to turn or screws to remove).

After completing a project for a close friend, I decided that this was the opportunity to try my new method and show my appreciation for the commission. He is fond of the Arts & Crafts style and needed a calendar for his workshop.

After I designed the frame, I started the project by making a material list and selecting the lumber. I had a couple of 5/4 roughsawn quartered white oak boards left over from a recent kitchen project, and all I had to do was determine which sections of the boards had the most figure. To do this, I used an old Stanley #70 box scraper (top photo, right). This is a great tool, and I routinely take it with me to the lumberyard.

Next, I surfaced and dimensioned all the parts, paying close attention to the different thicknesses of the stiles, rails and top cap. I kept the stiles square and parallel at this point and waited until all the joinery was completed before tapering the sides and cutting the angle on the bottom edges.

The four joints in the frame consist of two through-pinned mortise and tenon joints and two floating tenon joints. I used my Domino mortising machine for the floating tenon mortises and used an old Oliver hollow chisel mortiser for the bottom rail mortises.

First, I mortised the top rail and its matching mortises in the stiles with the Domino, as shown at right. Next, I positioned the stiles on the Oliver and mortised for the through tenons, chopping them halfway on each side to minimize any deflection in the chisel or discrepancies in the straightness of the mortise.

The Oliver's mortising chisel was slightly dull, and the mortise edges were a little ragged. To fix this, I used a very sharp cutting gauge to pare the edges and inside faces of the mortises. Now I was ready to raise the tenons.

I cut the tenons on my Hammond Glider printer's saw. The saw is from the 1960s and is the most precise machine in my shop. It has a sliding table that rides on twenty 1/2" ball bearings and is smooth and accurate. After determining the length and width of the tenons, I started by cutting their shoulders. Next, I mounted a tenon jig onto the Hammond's sliding table and finished the tenons by cutting their cheeks and sides.

Knowing that I would be making more frames in the future, I decided to make a dedicated taper jig, as shown at right. I chose to make the taper cuts on my table saw using a newly sharpened blade as this minimized the final sanding of the edges. When that task was done, I trimmed the ends of the stiles to approximately 10° to add a nice detail.

While I could have used faux pins that would have been 1/8" or so deep, I decided to use long ebony pins that would provide a mechanical lock in addition to the glue. I dry-assembled the frame and stepped back to the Oliver. I used a 5/16" mortise chisel and set the mortise depth so that it would pass through the tenon but not through the back side of the stile (see top photo on page 43). The ebony that I used for the pins came from my supply of old piano keys.

I cut the ebony pins to 5/16" square and about three inches long. To shape the ends of the pins, I set the miter gauge to 20° and formed a "dome" on one end, then I flipped it over and cut the other end. I returned the miter gauge to 90° and cut the pins to length. With the joinery cut and fitted and the pins made, my next step was to taper the sides of the stiles and to cut an angle on their bottom edges.

The last task prior to sanding and gluing was to rout a small, 1/16" chamfer on all the front edges. I did not chamfer the back edges, but I did lightly sand them to remove any edge sharpness. I also chamfered the ends of the through tenons. That done, I sanded all the parts with 220-grit sandpaper. Because of the pins being proud of the surface, the through tenons and the inside corners, I needed to finish-sand prior to glue-up.

Even though this frame is small, it does present a couple of clamping challenges. First, I had to deal with the tapered stiles,



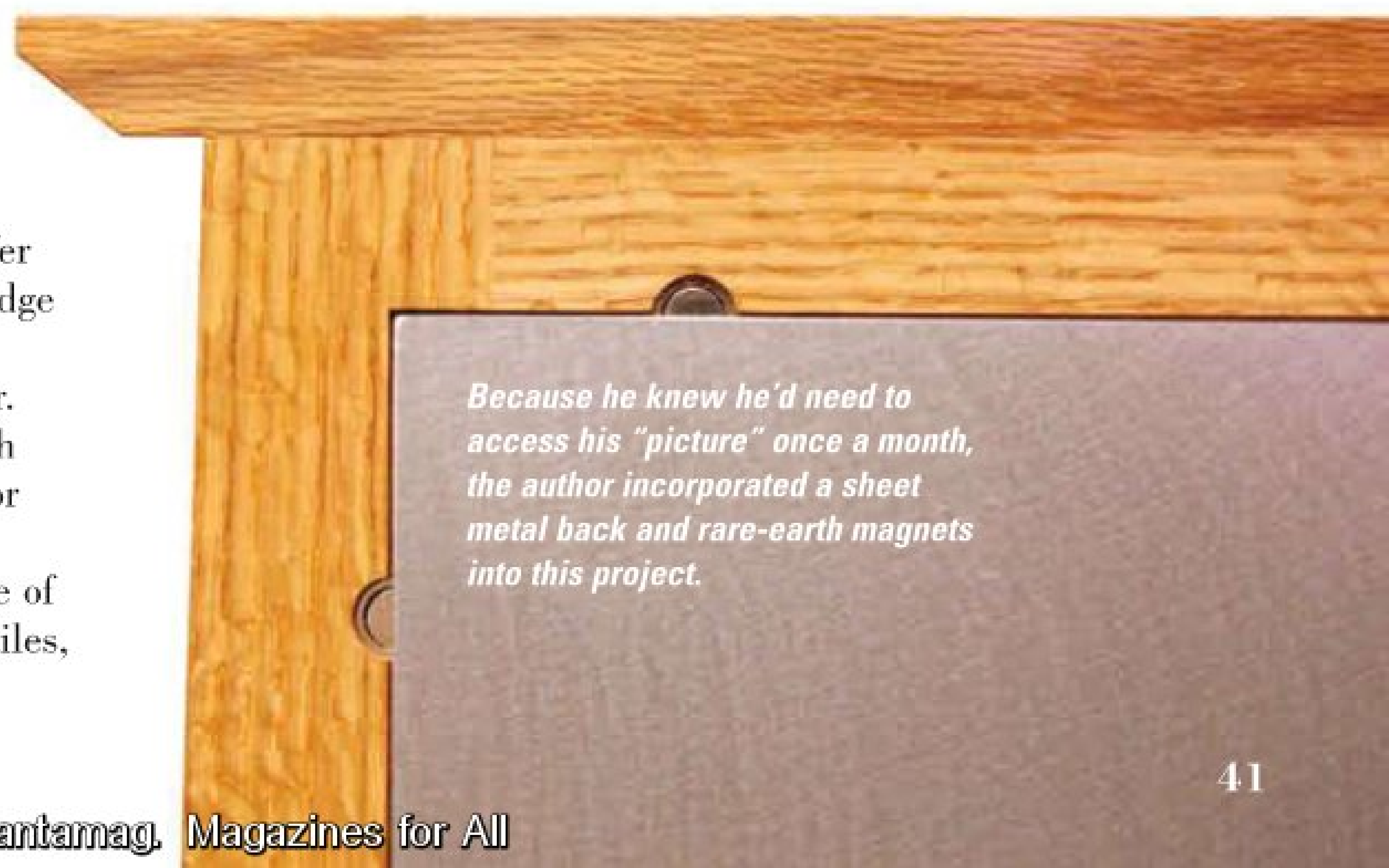
To select the best figured wood, the author used his Stanley #70 box scraper. A few pulls revealed the oak board's true color and grain.



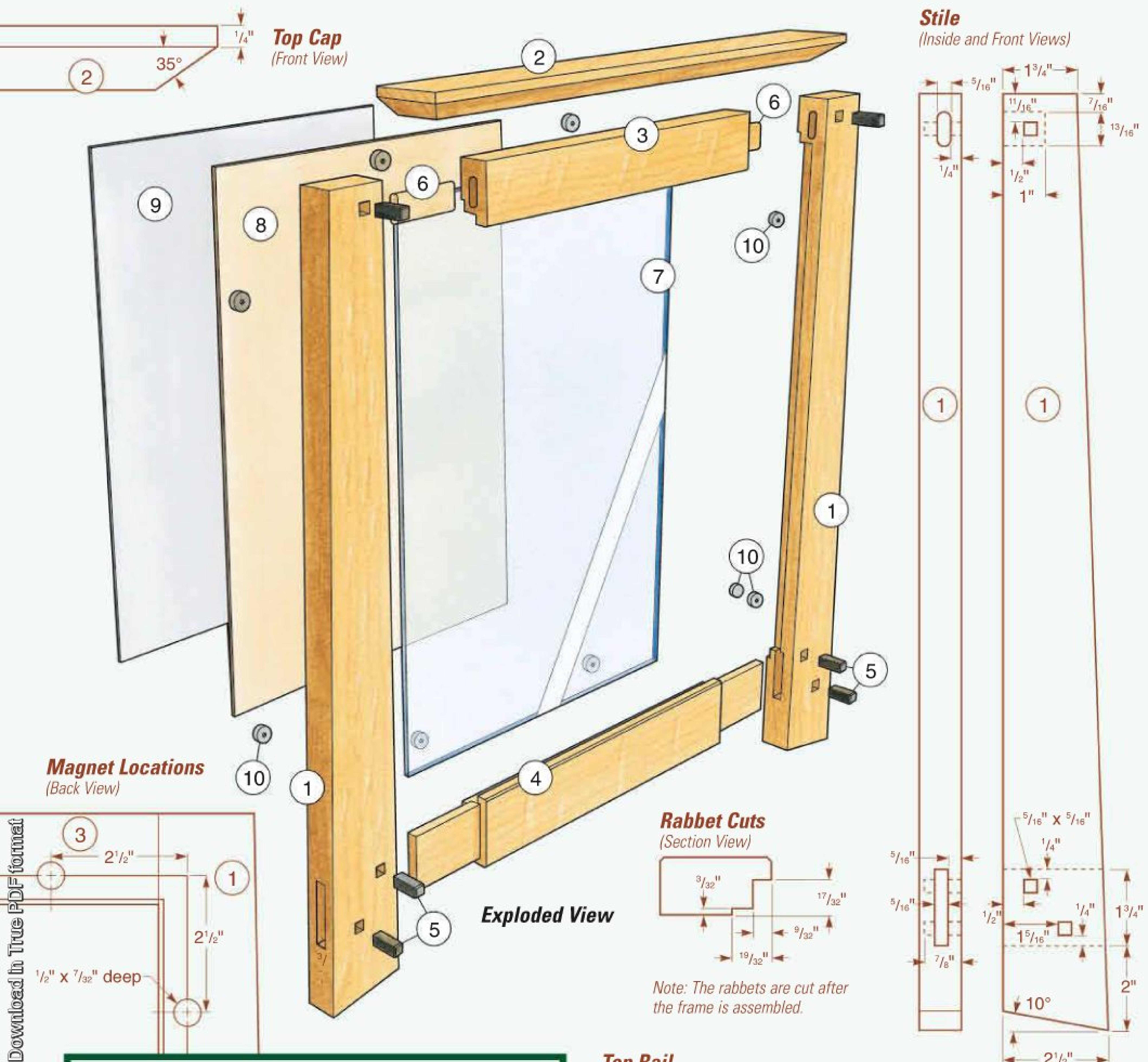
The author's Festool "Domino" tool was employed to create the four mortises for the loose tenons that hold the top rail in place.



Here the author uses a shop-made tapering jig on his table saw to form the tapers on the outside edges of the two stiles.



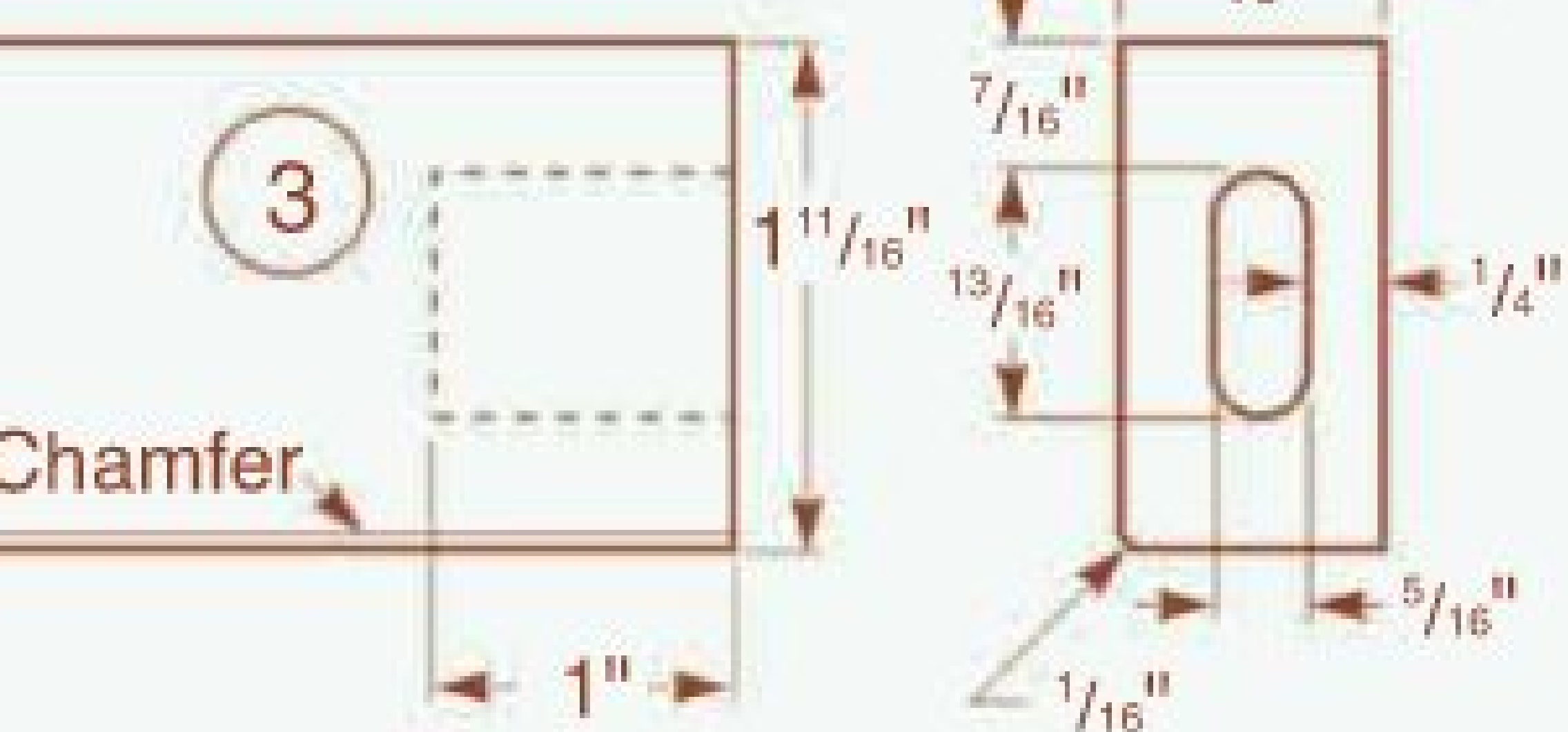
Because he knew he'd need to access his "picture" once a month, the author incorporated a sheet metal back and rare-earth magnets into this project.



MATERIAL LIST

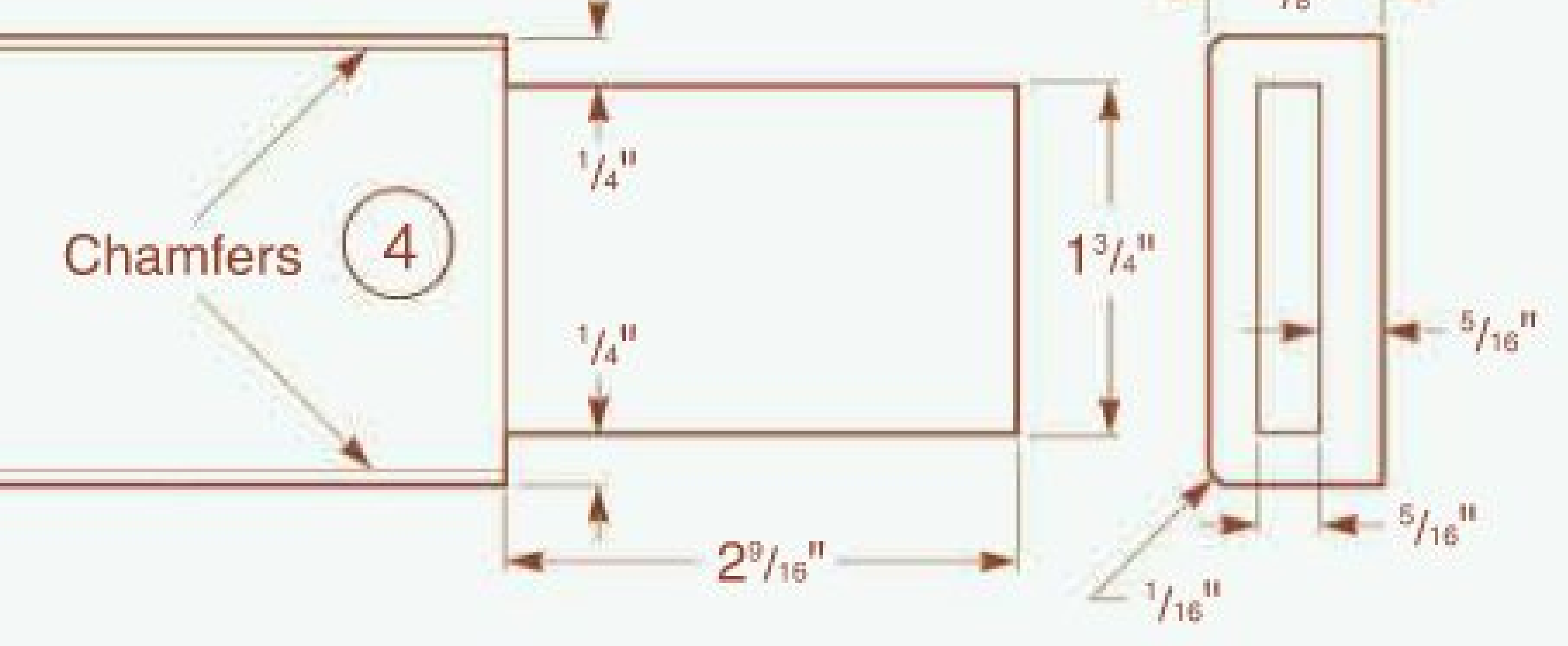
	T x W x L
1 Stiles (2)	1" x 2 1/2" x 22 1/4"
2 Top Cap (1)	3/4" x 2" x 16 3/4"
3 Top Rail (1)	7/8" x 1 1/16" x 11"
4 Bottom Rail (1)	7/8" x 2 1/4" x 16 1/8"
5 Ebony Pins (6)	5/16" x 5/16" x 7/8"
6 Domino Tenons (2)	8mm x 50mm
7 1/8" Glass Panel (1)	11 1/2" x 17"
8 1/8" Hardboard (1)	11 1/2" x 17"
9 20-gauge Sheet Steel (1)	12 3/16" X 17 5/8"
10 Rare-earth Magnets & Cups (8)	3/8" Dia.
11 Wire Hanging Clips (2)	
12 Picture Hanging Wire (1)	Approx. 18"

Top Rail (Front and End Views)



Note: This frame is for an 11 1/2" x 17" calendar. Adjust your parts to fit your calendar.

Bottom Rail (Front and End Views)



which meant that I had to make angled clamp pads and second, I could not clamp directly over the through tenons. What I did was to use two clamps, one on each side of the through tenon, as shown at right. This method allowed me to see the fit of the tenon and gave me access for cleanup of the excess glue. Once the frame was clamped tight, I tapped the ebony pins in place with a mallet and a small block of wood.

I gave the fresh glue joints time to dry overnight, then got started the next morning by setting up a router for the two rabbet cuts, as shown at right. I needed one rabbet for the glass, calendar and 1/8" hardboard assembly and another for the metal back panel (see *Drawings* at left for details). The rabbet for the metal back was routed first so that the bit's bearing would have a surface to ride against (the screw holding the bearing on would have hit the edge of the larger rabbet if I had cut it first). For the second rabbet, I carefully measured the thickness of the calendar set, glass and 1/8" hardboard assembly. After I had this measurement, I routed the rabbet to that depth plus 1/32". You do not want this rabbet too deep or too loose. If the rabbet is too deep, the calendar will be loose, or if it is too shallow, the metal back will not sit tight against the magnets. When I finished routing, I squared up the corners of the rabbets with a sharp chisel.

With the machining completed, I was ready to order the 1/8" glass and metal back panel and drill the holes for the magnets. For the back panel, I took the frame to a local supplier of sheet metal and, while I waited, they cut and fitted a piece of 20-gauge steel. I used 3/8" diameter magnets with their corresponding cups. This step did require very accurate measurements and drilling. Ideally, you want to drill the holes about 1/64" less than the magnet assembly. This will ensure that the metal back will lay on the magnets and not on the rabbet face.

Now I was ready to finish making the top cap. I set my table saw's blade to 35° and cut the bevels on the cap. The cap was then centered on the frame and glued directly to the top rail. Before I glued it on, though, I sanded it, working up to 220-grit sandpaper.

Finishing Up

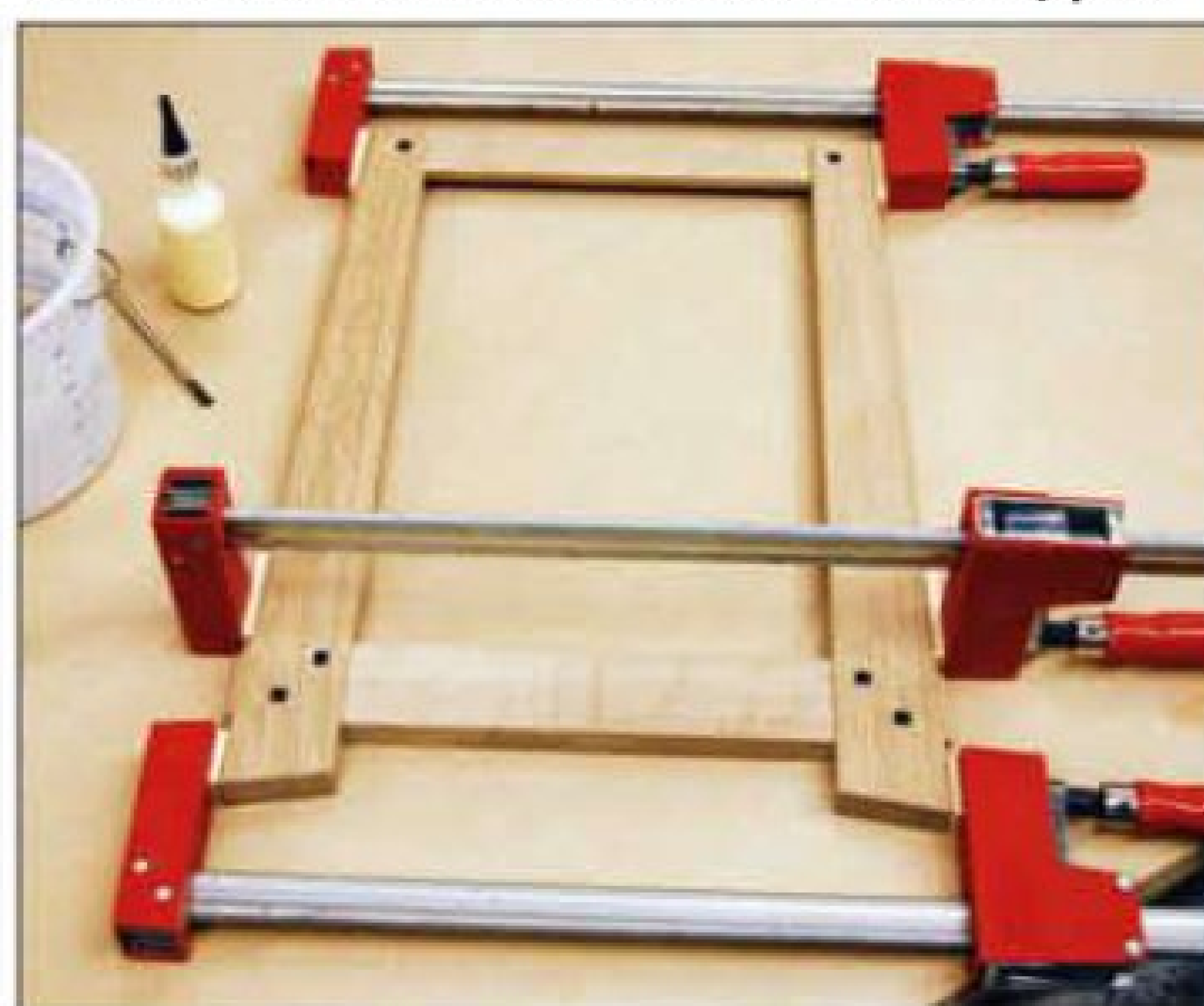
I used an oil stain and two coats of lacquer for the finish. When spraying, be careful not to fill the magnet holes with lacquer, as that would make it difficult to install the magnets (I put cotton balls in the holes when spraying). After the final coat had dried, I rubbed out the entire frame with fine steel wool, then I buffed the surfaces with a clean cotton cloth. While I was spraying the frame, I also sprayed a light coat on the metal back panel. The metal back was fairly clean, and all it required was a light sanding with an orbital sander.

The frame was finished and I was ready to install the magnets, drill the back of the stiles for a wire-hanging system and insert the glass, calendar, hardboard and metal back panel. The 1/8" glass received a good cleaning after I took the sharpness off the edges with my diamond honing stone (I used a 2" x 6" diamond honing stone with water). Next, the calendar assembly went in along with the metal back and, finally, I attached a length of wire for hanging the frame. All that was left was to wrap a ribbon around it and deliver it to its new home.

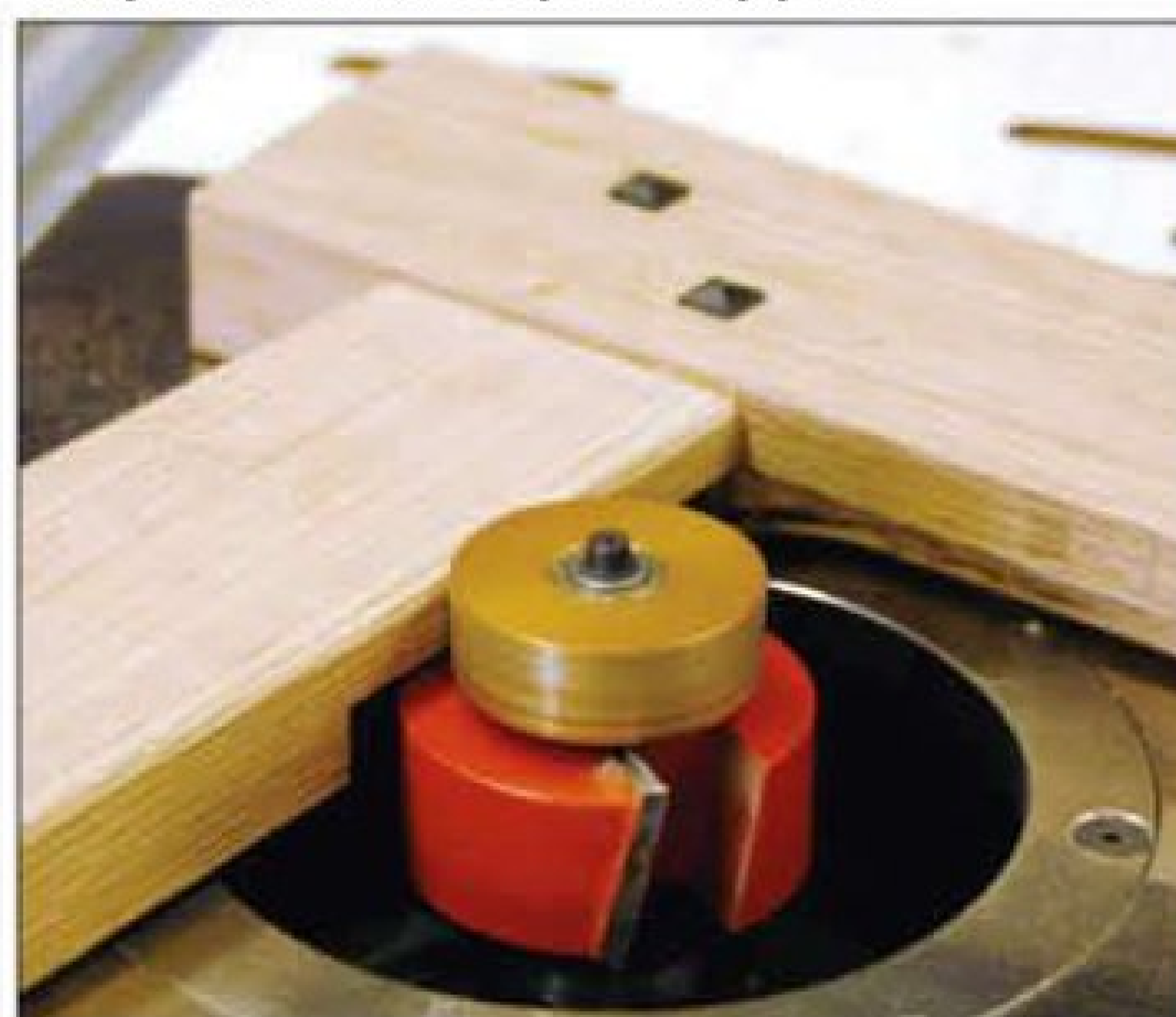
David B. Fowler is a woodworking instructor and professional furniture maker who resides in Wichita, Kansas.



After dry-fitting the frame and positioning it on the Oliver, the author formed mortises for the ebony pins.



When gluing the frame, the author used three clamps with wedge-shaped clamp pads.



The author formed the rabbets on his router table using a large rabbeting bit guided by a bearing.

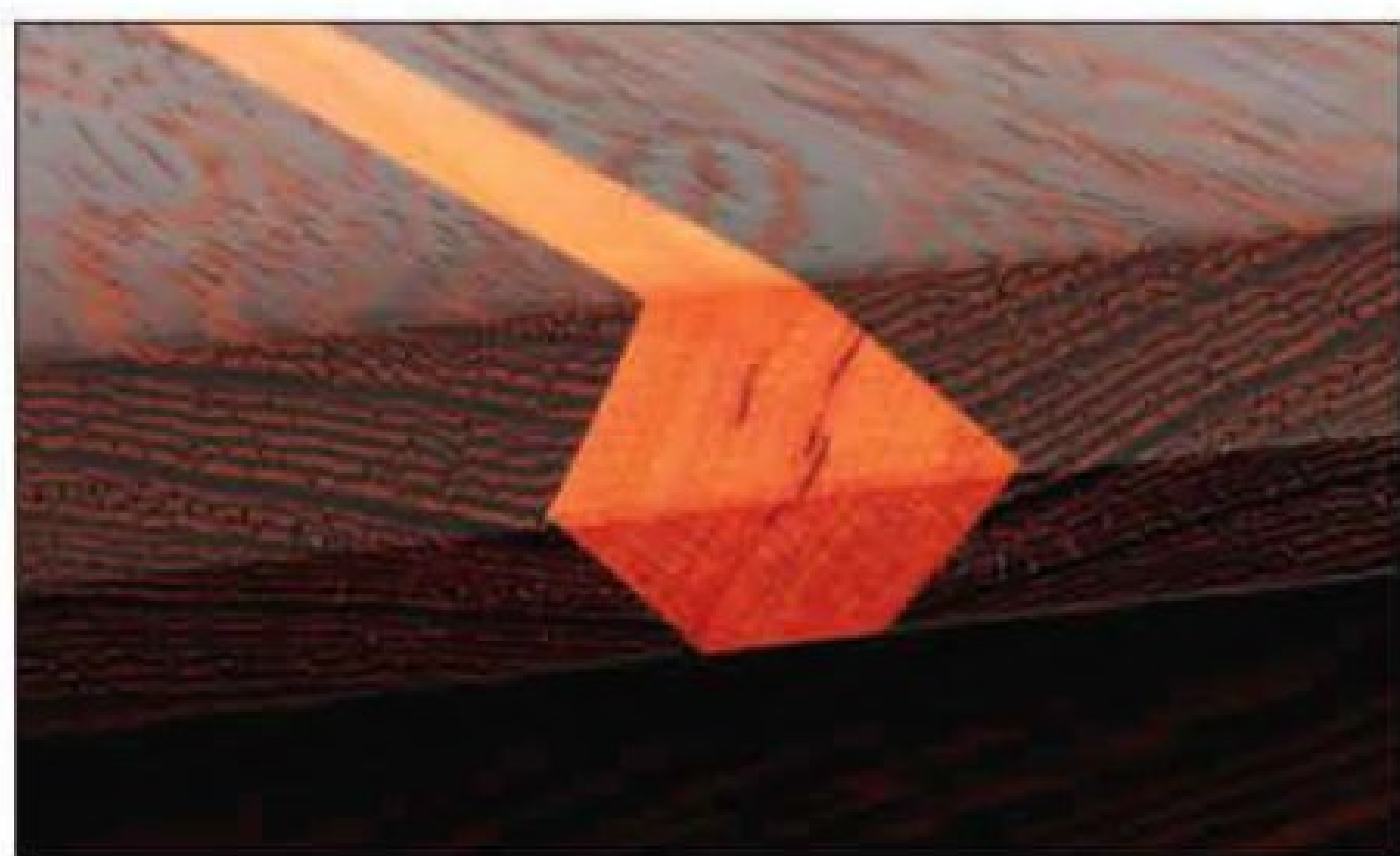


Oil stain was applied to the frame with a soft cloth, followed by lacquer topcoats.

New Look for a Country Table

By Rob Johnstone

Sometimes, it's all in the details. In this case, our author took a classic country project that appeared in the Journal over 20 years ago and did a modern makeover on it.



Where do project ideas come from? In the past, my wife often brought me catalogs filled with items more costly than we were willing to buy and asked, “Can you build one of these?” (Have you ever met a woodworker who would answer “no” to that question?) My kids have come to me over the years saying that they need a bookcase, cutting board, bracelet holder, rocket ship (I did not make that last one up!), you name it. But the table you see here was a different story. Last summer, the staff here at the *Journal* was working on converting some of our out-of-print archival projects to a downloadable format, and I caught a glimpse of a black-and-white photo of a table.

“Wow, that is a really stylish, modern-looking table design,” thought I, “I need to take a closer look at it.” To my surprise, it was not a modern design at all, but a traditional pine country table. Still, there was something about it. I started to wonder what it would take to convert the humble country effort to a modern-looking end table. After a quick chat with art director Jeff Jacobson, the answer came back: “not much.” I removed some little nubs on its feet, added a chamfer around the top, changed the species of wood, inserted a cherry accent strip and added a second wedge to each tenon — and the deal was done. The design had gone from down-home to uptown in just a few minutes. Now all I had to do was build it!

Starting with Species and Grain Selection

The original country table had been built from plainsawn pine — a reasonable and traditional choice. The modern version could have been made from a straight-grained, light-colored softwood like Douglas fir or longleaf pine, but I had been thinking of using quartersawn ash and dyeing it nearly black. As I was perusing my favorite lumber racks, looking for just the right ash lumber, I glanced over and saw a stash of some really large wenge boards. I did a sort of double take, because the wood had many of the visual characteristics that I had hoped to develop in dyed ash lumber — only here it was naturally occurring in the wood. So, I grabbed one of the long and wide wenge boards, measured it up and found I could get the whole table out of that one piece. (This entire table uses less than eight board feet of lumber.) The grain of the plank changed from riftsawn at one edge to cathedral figure on the other edge. After noodling it over for a bit, I decided that all the legs and feet would be made with riftsawn figure. The only place the cathedral grain would be seen would be on the stretcher and the table top. Additionally, for the table top, the riftsawn grain would be oriented to the outside edge of the top with the cathedral figure divided by a cherry accent strip down



the center. At first, I thought the cherry accent was just going to be a narrow strip to add a touch of color. I also planned to use two cherry wedges in the exposed through tenons on the legs as additional accents. But, after looking at Jeff's CAD drawings of the table, it occurred to me that a 3/4" x 3/4" accent strip, turned 45° to the plane of the top, might bring some visual interest to the piece. I blame this kind of thinking on master woodworker Ian Kirby, who has influenced my design sensibilities over the years (see page 30). A tweak of the CAD drawing convinced me I was right, and my coworkers agreed. With those choices made, it was time to start making sawdust.

One quick word about wenge. I had never used this species of wood before this project. I found it to be a very dense hardwood that cuts, glues and finishes well. One detail that I learned about wenge the hard way is that it splinters, very easily, on the edges. While I didn't find this to be a problem in general, when I got to chopping the through mortises on the legs, it gave me fits. I needed to resize the openings and carefully insert the tenons to avoid breaking out the edges of the openings.

Wenge is a dark wood with subtle red highlights. To start the project, the author selected sections from a large and wide board to compose the table top.





The legs and feet are joined together using an "open" mortise joint. The author raised the tenon on the legs using a miter gauge on his table saw (top left). After cutting out blanks for the feet, the mortise opening was formed on the table saw using a shop-made jig (inset at left). Testing the fit allowed for confidence in the glue-up (middle and lower left photos). A 1/8" plywood template was used to trace the leg shapes before cutting their profiles on the band saw (photos above right).

Making the Legs and Feet

The feet, cleats and legs (pieces 1 through 3) of the table form a shapely support for the table top. In addition, they are made with a couple of nice pieces of joinery which are attractive, fun and practical. I recommend beginning by making the legs. I cut them to width and length, marked out the mortise location and then stepped over to the table saw to raise the tenons on the ends of each leg. (Note: if you choose to use wenge as I did, I found it important to use a white pencil to do my markup; the wood was too dark for a regular pencil line to be seen.) Because the tenon on the foot end of the leg was so long (4¼"), I couldn't slice it with a traditional tenoning jig, so I nibbled away the waste as shown in the top left photo. (I would have used a dado head in my saw, but I discovered that my new table saw will not accept my old dado cutters! Even woodworking editors are forced into workarounds ...) With the tenons formed, I then chopped out the through mortises with my mortising machine. You can also cut the cleats to length and width and use the mor-

tising machine to form those mortises as long as you have the mortising machine set up. If you don't have a dedicated mortiser, use a Forstner bit and a chisel to chop them. With those tasks behind me, I moved on to the feet.

Start that process by cutting blanks for the feet that are 5" wide and 10½" long. Next, cut the blanks to match the geometric pattern shown in the *Drawings* at right. You will machine these pieces while they are in this shape, forming open mortises that capture the long tenon on the end of the legs. This happens when all three pieces are glued together. I used a modified tenoning jig on the table saw to cut those open mortises. The jig's fence leaned back at 45° so I could plow the opening in each foot (inset photo above left). I tested the fit of the open mortise on the tenons as I went. Then I stepped to the band saw and cut a couple of square notches on the foot pieces that would help me clamp them together more easily. Staying at the band saw, I cut the curves onto the edges of the legs, the last step before gluing the feet and legs together. As you can see in the



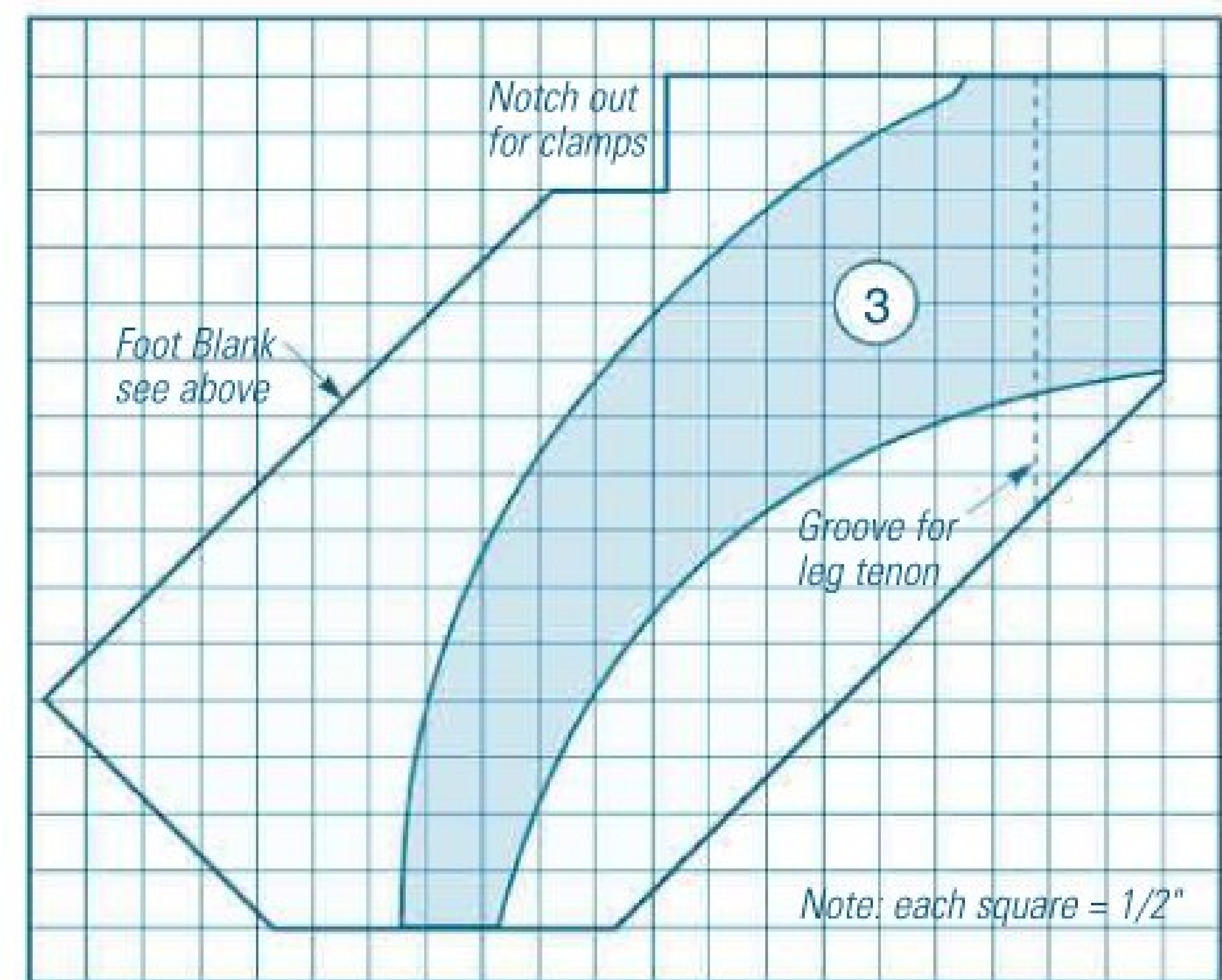
MATERIAL LIST

	T x W x L
1 Cleats (2)	3/4" x 1 1/2" x 14"
2 Legs (2)	3/4" x 3 1/2" x 17 1/2"
3 Feet (4)	3/4" x 5" x 10 7/8"
4 Stretcher (1)	3/4" x 2 1/2" x 21 1/2"
5 Wedges (4)	1/8" x 1/2" x 7/8"
6 Tops (2)	3/4" x 7" x 26"
7 Top Inlay (1)	3/4" x 3/4" x 28"

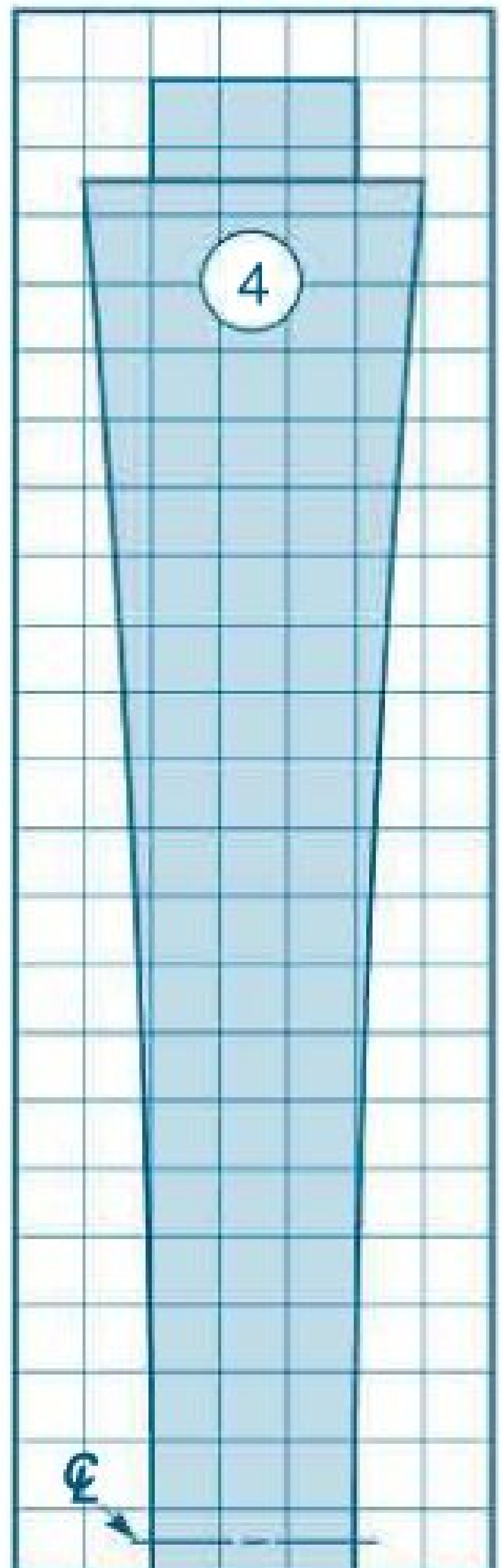
Inlay Detail (Section View)



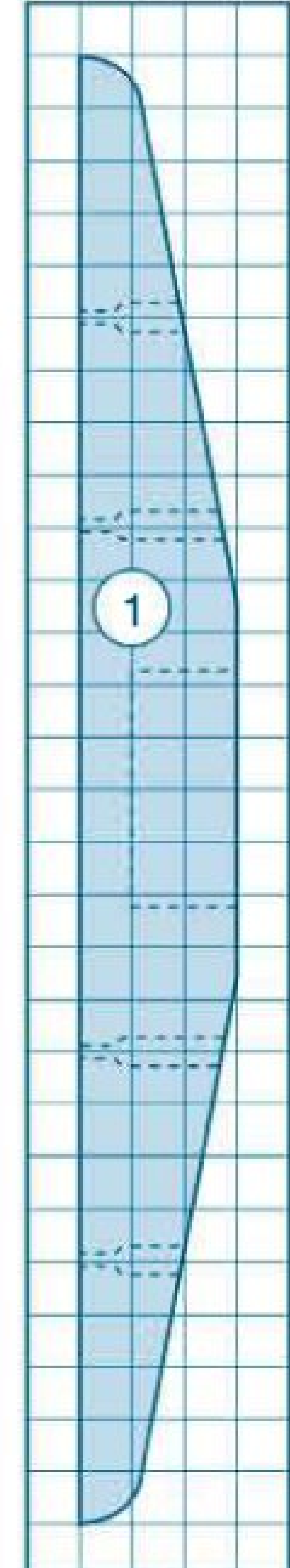
Foot



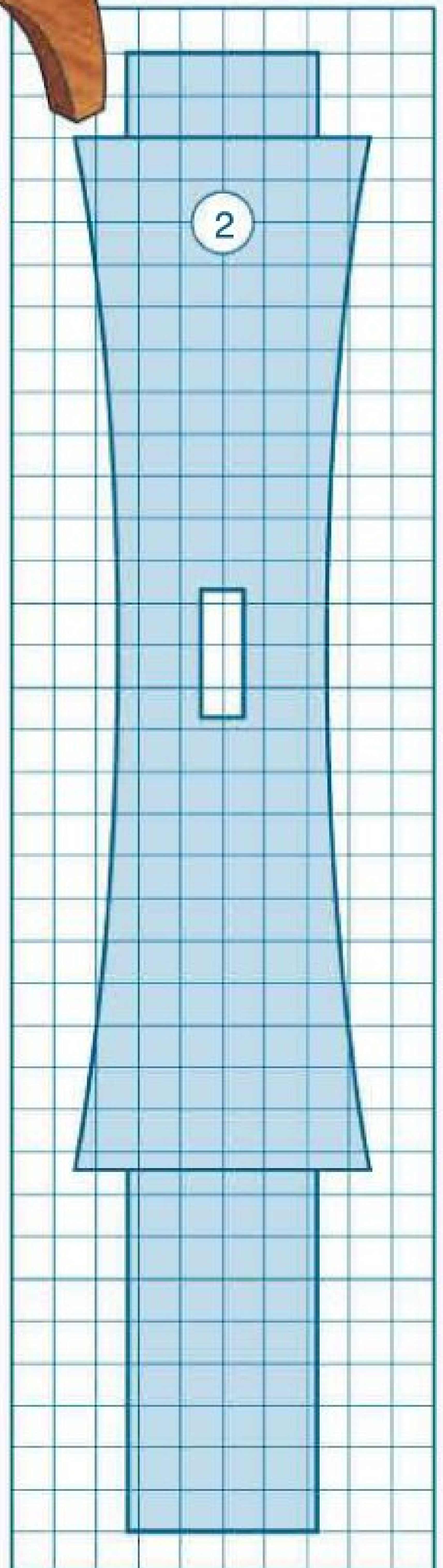
Stretcher



Cleat



Leg



The profile of the table is clean and well-proportioned. The open spaces between its components remain attractive as you walk around the piece.



Fitting the center inlay strip started out with a test in scrap wood (photo above). It is important to make use of a zero-clearance insert and an unobstructed sacrificial fence when making the V-groove (photos center and bottom).

photos on the previous pages, glue-up not only required clamping across the face of the legs, but I squeezed the open mortise walls together, using wax paper to keep the glue block and the bench from getting stuck to the glue-up. After the glue had cured, it was time to mark out the final leg shape on the sub-assemblies and cut them out on the band saw. As you can see in the top right photo on page 46, I took the time to make accurately shaped templates from scrap 1/8" plywood of the foot shape. I did this for all of the shaped parts. It takes just a few minutes, but it provides an added level of control and makes the rest of the process go much more smoothly.

While the cleats are still in a rectangular shape, take a few moments to bore the holes for the screws that will secure the table top to the cleats. These are two step holes as shown in the *Drawings*. Following that, I cut the profiles onto the lower edges of the cleats as shown in the *Drawings*.

Once the legs, feet and cleats were cut to shape, I took them over to my spindle sander and sanded the edges up to the marked out lines. With that done, I glued and clamped the cleats to the top of the legs and allowed the glue to cure. At that point, I set them aside and moved on to the last couple of components.

Building the Table Top and Stretcher

The table top is composed of three pieces of wood, and the stretcher is secured with cherry accent wedges (pieces 4 through 7). As I mentioned before, the stretcher was formed out of the cathedral grain section of the stock. I cut it to length and raised the tenons on its ends as I did with the legs. (See the *Drawings* for construction details.) The original country table used only one wedge per tenon, which did not make sense to me if it was intended to be something other than eye candy, so I placed two wedges per tenon (see photo, opposite page), as shown in the *Drawings*.

The table top is simple in concept, but a little tricky in execution — only because it is a long, exacting joint. Go ahead and cut your two tops just slightly oversized, so you will have a bit of stock to trim if necessary. Making the V-groove cut on the table saw requires some preparation. You will need to secure a sacrificial face to the saw's fence in such a manner that you can slide the tops without obstruction. You will also need a zero-clearance insert in place that you sliced the blade opening through at 45° ... see the close-up photo at left. This is because you need to form the V-groove, but leave a very small amount of wood in place on both sides of the V — less than 1/16". That tiny bit of stock needs the zero-clearance insert to ride on. I also used a featherboard to help control the cut. I heartily suggest that you test your setup



with some scrap lumber and even go all the way to glue-up as I did. It is an odd little joint, and practice never hurt anyone!

When I had the tops machined, I formed the insert strip by cutting an over-long piece of 1" cherry and then machining it perfectly square in my planer.

Glue-up of the table top was not tricky at all (photo at right), but I did check to make sure that the two tops were aligned with each other (flat across their width). Once the glue had cured, I used a hand plane to remove the triangle of cherry that protrudes over the flat surfaces of the table top. Then I cut it to final size. There are a few ways that you might create the rather large chamfer on the edge of the table top, but seeing as I had the 45° zero-clearance insert already made, I just did it on my table saw. It worked really well.

Wrapping Up the Last Details

All of the components were now complete, which left just a couple things to do ... first off, you guessed it ... sanding. One nice thing about this little table is that there are a lot of flat surfaces, which are easy to sand. One not so nice thing about this table is that there are a lot of curved edges to sand — which are a lot trickier to do well. I used a combination of spindle sanders and hand sanding on the edges. For the flat surfaces, I used my trusty 4 x 24 belt sander and a random-orbit sander. But I always do my final — in this case 320-grit — sanding by hand. I “broke,” or gently rounded over, the edges of the pieces during this step.

Once the sanding was done, it was time to glue the stretcher in place. This was done with extreme care to avoid breaking off an edge of the through mortise. I cut a temporary brace for the clamp-up that was exactly the distance from shoulder to the shoulder of the stretcher. This allowed me to clamp top and bottom on the leg subassemblies and keep the assembly exactly square. I glued the wedges and tapped them in place, wiped all the excess glue clean with water and a soft rag, then waited for the glue to cure. When the glue was dry, I trimmed the excess off the wedges and sanded the tenons and wedges flush to the legs. Now it was ready for the finish.



Projects From Our Past

Rob used a plan from the December 1990 Woodworker's Journal as the starting point for this table. The original plan, and more than 90 other classic plans from the Journal's archives, are now available in downloadable format for \$1.00 each. For more details, visit www.woodworkersjournal.com/classics.



When gluing up the table top and the cherry inlay strip, it is important to keep the panels in alignment. After a test fitting, the author found that square-head clamps helped to achieve this goal.



The author used the fence as a guide on the band saw when slicing the slots to accept the cherry tenon wedges. To work properly, the saw kerf must be slightly smaller in width than the wedges are thick.

I finished the table top and the legset separately. My first application was amber shellac mixed three to one with denatured alcohol (right from the can). I wanted the amber color to highlight the lighter grained flecks in the wenge. I paid special attention to the end grain, making sure to seal it well. Then I used three coats of sprayed-on shellac from an aerosol can (see Finishing Thoughts on page 74), de-nibbing between coats with #0000 steel wool. I applied a final coat of lacquer from a spray can, because I think the lacquer is a little tougher than the shellac.

Once the finish had cured, I attached the top to the leg-set with screws, and the table was completed. And I must say that I think it turned out well. The dark wenge accented by the cherry lumber looked very sophisticated: equally as attractive, but quite a bit different from, its country pine table origins.

Rob Johnstone is the editor in chief of Woodworker's Journal magazine and a shop rat from way back.

Today's Shop

The Downsizing Trend Hits Power Tools

By A. J. Hamler

Not too big and not too small, the new crop of compact tools brings more power to smaller packages, making for lighter weight and improved control.



Cordless power tools were introduced by Black & Decker in 1961. This invention led to an association with the National Aeronautics and Space Administration, which hired Black & Decker to develop cordless power tools such as a zero-impact wrench and rotary hammer drill for the Gemini and Apollo missions.

For some years now, we woodworkers have been faced with an interesting question: “Should I use a full-size tool or just go for a little toss-in-a-drawer tool?”

Of course, for most serious woodworking tasks, the little tools simply aren’t an option. Minimal torque, no versatility and not much power (and that power doesn’t last long). They sure are light and easy to use, though. On the other end, full-size tools offer power, speed and stamina, plus lots of versatility with multiple speeds, torque settings, cutter interchangeability and more.

But they’re heavy.

Spend an afternoon holding a big 1/2" corded drill over your head installing ceiling trim, and your arms and shoulders will complain for days. We’ve all asked: why can’t there be serious tools that are “just right?”

Finally, there are. And the offerings seem to grow daily in this major downsizing trend.

But why now? If you’re like me, you’ve wanted serious tools in this size category for a long time, so why the sudden explosion? Here’s your first clue: Cordless tools started this revolution.

Cutting the Cord

With the advent of lithium-ion batteries, the door opened for brand-new tools that upped the power while lowering the weight and size.

“While lithium-ion has been around for a while in laptops, cell phones and PDAs, a different type of cell was needed for power tools that could withstand potential spikes in power requirement, say, when you stall a drill, or even the general usage cycle,” says Bosch’s Edwin Bender. “Whereas a cell phone drains the battery within a fairly narrow power band, power

In the photo at left, the author's left arm (with Milwaukee's old reliable Sawzall) was begging the photographer to hurry up, while his right (with their new Hackzsall) was feeling no pain. The 14.4-volt DeWALT (at right) won't even fit inside this cabinet to replace the magnetic catch, but their new 12-volt driver fits easily — and throws some helpful LED light onto the job.



tools operate over a much wider range, depending on if you are driving a screw or drilling with a hole saw."

For small cordless tools previously, 3.6 volts was about the maximum because it took three 1.2-volt NiCad cells to reach that power level; pack more 1.2-volt cells into it, and you quickly got a big, heavy tool. Li-Ion cells multiply the power significantly, but do it in the same space.

"With lithium-ion, you are able to cram three times more energy into the battery without making it larger, so now you get not only the benefit of small size but also enough power to use the tool all day," says Bender.

As a result, a compact tool with three lithium-ion cells can often be the same size and weight of those little 3.6-volters. Combine three lithium-ion cells — with average voltage of 3.6 and maximum voltage of 4 volts per cell — and you get the current crop of compact tools rated at 12 volts max power.

But why settle on 12 volts, as all the manufacturers seem to be doing? Christine Potter, director of cordless tools at DeWALT, notes that 12 volts hits that just-right sweet spot. "Twelve volts is the optimal voltage for a large portion of fastening applications," Potter says. "Two cells, or 8 volts, would not be enough voltage (power) for professional fastening applications. On the other hand, four cells or 16 volts approaches the performance, size and weight

of 18 volts. Thus, three cells creating 12 volts results in the ideal performance and ergonomics to complement 18-volt products."

Cordless Options

It's no secret that drivers and drill/drivers have led the way in this category since Bosch introduced that first 10.8-volt PS20 driver a few years ago. Although the batteries are the same today, Bosch and other manufacturers now cite the maximum voltage of 4 volts per cell when rating the power of these tools. (The label on the current PS20 battery has been changed to reflect this 12-volt rating.)

With Porter-Cable joining the party recently, virtually every major manufacturer offers a driver, drill/driver and impact driver. The reaction has been very positive.

"I have a corded, very powerful drill I use for heavy jobs — a Milwaukee Hole Shooter," says Andy Barss, a woodworker in Tucson, Arizona. "I like it a lot, but what really opened my eyes were two of the Bosch 10.8/12-volt drill/drivers. I have one, my wife the other, and they're incredibly useful. I put up a whole dust-collection system with mine."

Because they share a similar battery design — a triangular stick that slides up into the handle — most drill/drivers look and feel about the same. The new crop of "12-Volt MAX" tools from DeWALT has gone in a new direction with flat battery

packs, as has Ryobi's One+ line. They're still 12-volts made up of three individual lithium-ion cells, but they're arranged side-by-side instead of in a triangular bundle. The configuration — a standout in this class — makes it possible to set them securely upright.

On the heels of the drill/driver tide, other 12-volt compact tools are beginning to appear, beginning with reciprocating saws. Milwaukee's "Hackzall" led the way, followed quickly by Hitachi's CR10DL and Ryobi's One+ Hybrid saw, both of which feature an adjustable handle. Porter-Cable's "ClampSaw" also has an adjustable handle, as well as a unique modified shoe that clamps to the workpiece.

Other new cordless offerings are a bit rarer — some represented by only one company — such as DeWALT's DCT410S1 12-Volt Max inspection camera and DCT414S1 infrared thermometer. Dremel has adapted lithium-ion technology to their signature rotary tool to introduce the Dremel 8200. Also from Dremel is the 8300 Multi-Max oscillating tool, a 12-volt cordless take on the venerable Fein MultiMaster. Bosch and Craftsman also offer cordless oscillators with the PS50B Multi-X and Nextec Multi-Tool, respectively.



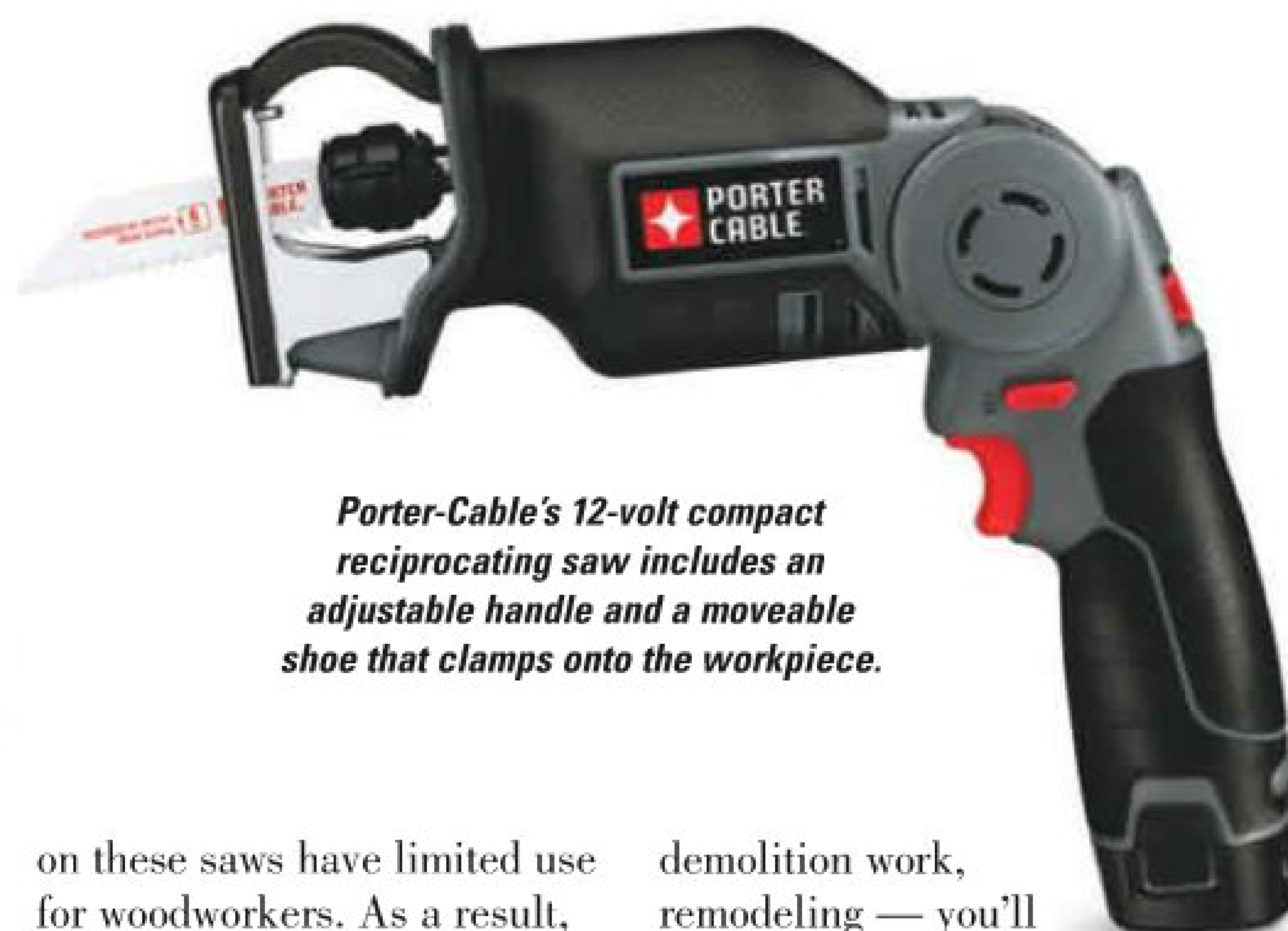
RIDGID's 12-volt drill/driver is dwarfed by an older Makita with the same voltage.



Bosch made the first of the current crop of compact drivers. Although the battery hasn't changed, Bosch now uses a 12-volt nomenclature, similar to DeWALT's, for tools in this class, instead of the 10.8-volt rating it used earlier.



No matter what kind of job you have, there's a recip saw sized to match. Shown here are the full-size DeWALT, RIDGID Fuego compact and Milwaukee's Hackzall.



Porter-Cable's 12-volt compact reciprocating saw includes an adjustable handle and a moveable shoe that clamps onto the workpiece.



Lighter, smaller and with better bulbs, today's crop of utility flashlights truly outshine their older counterparts.

The first batteries for cordless power tools were NiCad (nickel cadmium), followed by nickel-metal-hydride (Ni-Mh). The current crop of cordless power tools use mainly lithium-ion (Li-Ion) batteries. Lithium's light weight in these batteries is primarily responsible for the incredible shrinking power tool.

And, of course, just about everybody offers a flashlight. Combo kits have always included one, it seems. The difference is that these smaller ones are lighter and, in many cases, brighter than those big clunky ones we've seen over the years. You might actually use these.

Oddly, as of this writing, there aren't many circular saws in this class, with the near-twin Ryobi CS120L and Craftsman Nextec saws in a lonely category — for now. Unfortunately, the 3 $\frac{1}{2}$ " blades

on these saws have limited use for woodworkers. As a result, full-size machines, either cordless or corded, are still the common choice here.

"I'm now looking into a circular saw that's smaller and lighter than my corded Porter-Cable 7 $\frac{1}{4}$ " saw, says Barss. "That one is fine, but a lighter one with less cutting capacity would be great." His wish may have come true.

Cordless, but Uncommon

A funny thing happened on the way to the compact revolution. Users welcomed cordless offerings so readily that manufacturers began to wonder if smaller corded tools would have a viable market, too. If users like Barss are any indication, there is a market.

"Compact cordless is a reality, and as a general rule users desire more power in a smaller, lighter-weight product," says Bill Harmon, a product manager for DeWALT and Porter-Cable. Harmon noted that the market is there, but the challenge lies in the fact that once you limit a tool to a target weight range, current motor configurations eventually max-out on the power they're able to deliver in the space available. Still, manufacturers are eager. "I'd say generically speaking we'd like to go that route, but currently much of this is dictated by the user's desire to trade off power for size."

And there's the key for compact corded tools, just as with cordless. For some jobs — building a deck,

demolition work, remodeling — you'll still need tools with enough power to make Tim "The Toolman" Taylor a happy guy. But for day-to-day work, the options are wider.

"Compact tools can perform the majority of a contractor's needs without the need of a full size tool," says Rachel Lombardo, Porter-Cable's manager of corded products. "This size vs. power equation gap is closing and users prefer to use more compact designs when available. Knowing that compact tools can't perform all tasks equally, their value is the weight, ease of use and the ability to get into smaller areas easily."

Small corded tools — like their cordless counterparts — have been around for ages, mainly small drills, palm sanders and the like. An upgrade to these occurred several years ago with the introduction of laminate trimmers. These little routers were great for, well, trimming chores, but they often lagged for tougher work. Bosch was a leader again in this area with their Colt router, a 1hp dynamo that caught on quickly with woodworkers.

"The Colt is fast and easy to use for light routing tasks, but it has the power that laminate trimmers lack," says woodworker and writer Ralph Bagnall, noting that compact corded tools offer something besides lower weight. "I really like the small Porter-Cable

Continues on page 54 ...

Same power, different shape: Most 12-volt compacts use a triangular stick battery, but DeWALT's flat battery allows tools to easily be set upright.



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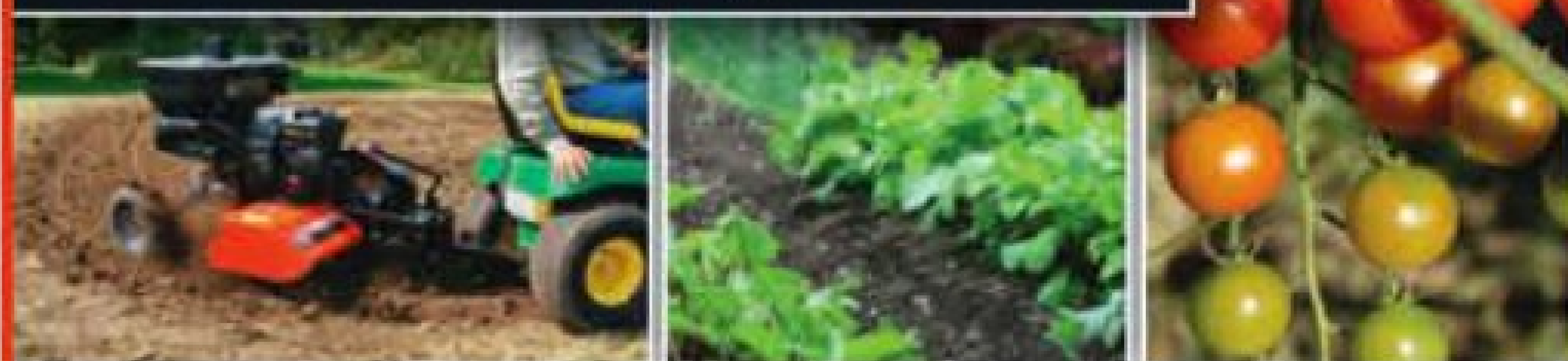
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Bosch was a trendsetter with the 1hp Colt compact router, which upped the ante with more power and versatility than common laminate trimmers.



Similar in design to the DeWALT DW611, Porter-Cable's 450 also comes in kit form with dual bases. Although 7 amps like its DeWALT cousin, the 450 is a single-speed machine that runs at 27,000 rpm.



Sometimes you just don't need a full-sized circular saw. RIDGID's Fuego 6 1/2" saw (left) helps you get the job done with less fatigue. Among the latest compact router offerings, DeWALT's 1 1/4hp DW611 is available in a kit that includes a true plunge base.



A big belt sander is fine for deck stripping, but for small jobs, Porter-Cable's 371K is a perfect fit.

belt sander and the Bosch Colt, because they offer more control in many situations than their 'full-sized' brothers. I've already replaced full-sized belt sanders with the smaller Porter-Cable."

The sander he's referring to is the Porter-Cable 371, introduced just a few years ago. You won't be stripping a deck with one of them anytime soon, but for small work — cabinet doors and drawer fronts, say, or flat railings — it has more than enough power in a very light and easily controlled package.

Cordless Considerations

The Bosch Colt and Porter-Cable 371 may have been the early birds in the cordless category, but other manufacturers are catching up.

In addition to their 12-volt cordless oscillating tool, Dremel offers their Multi-Max corded version. Smaller, lighter and yes, less powerful than the full-sized Fein MultiMaster and Rockwell SoniCrafter, it still tackles a variety of chores for which the two larger machines could quickly cause arm fatigue.

Remember that smaller circular saw Andy Barss longed for earlier? RIDGID

has one as part of their "Fuego" corded line. It includes a 6 1/2" circular saw, a 5" fiber-cement saw, compact orbital reciprocating saw and a small but beefy one-handed recip saw. (RIDGID also has an 18-volt Li-Ion version of the one-handed recip.)

The biggest news in this category has to be the recent introduction of a pair of compact routers from DeWALT and Porter-Cable. Rated at 1 1/4hp, could they be the "missing link" between laminate trimmers and full-size routers? At just 1/2hp less power than the Porter-Cable 690 and DeWALT DW616 routers, they're much more powerful than today's laminate trimmers.

"Most lam trimmers are 5 amps and this is 7, so just by the math you're looking at over 28 percent improvement in power, which allows for larger bit cutting and less bogging of the bits, less vibration and less burning due to bit slowdown," says Bill Harmon. "Although with the increased power the compact router becomes an upgrade to the trimmer that allows you to do many of the mid-size applications with one hand, so there will certainly

be a gravitation toward this product because of how many applications it's able to accomplish that you can't do with other trimmers today."

The two machines look like twins and share several specs, but there are differences. The DeWALT has variable speed and LED guide lights, two features the Porter-Cable doesn't offer. Both machines weigh just a hair over four pounds, and both have an option no laminate trimmer has ever offered: a plunge-style base.

The compact category is still in its growing stage, especially for corded machines. Chances are good that between the time I write this and the time you read it, more corded compact tools will be on the drawing boards if not nearing official introduction. With both users and manufacturers excited about the category, that's a trend you can count on.

"Outside of jobs such as demolition and remodeling, one-size-fits-all products will be a thing of the past," says Rachel Lombardo. "Compact [tools with] appropriate power and size will lead the corded category, and pace cordless development and expansion."

A.J. Hamler writes frequently for *Woodworker's Journal* and is the author of *Civil War Woodworking*.

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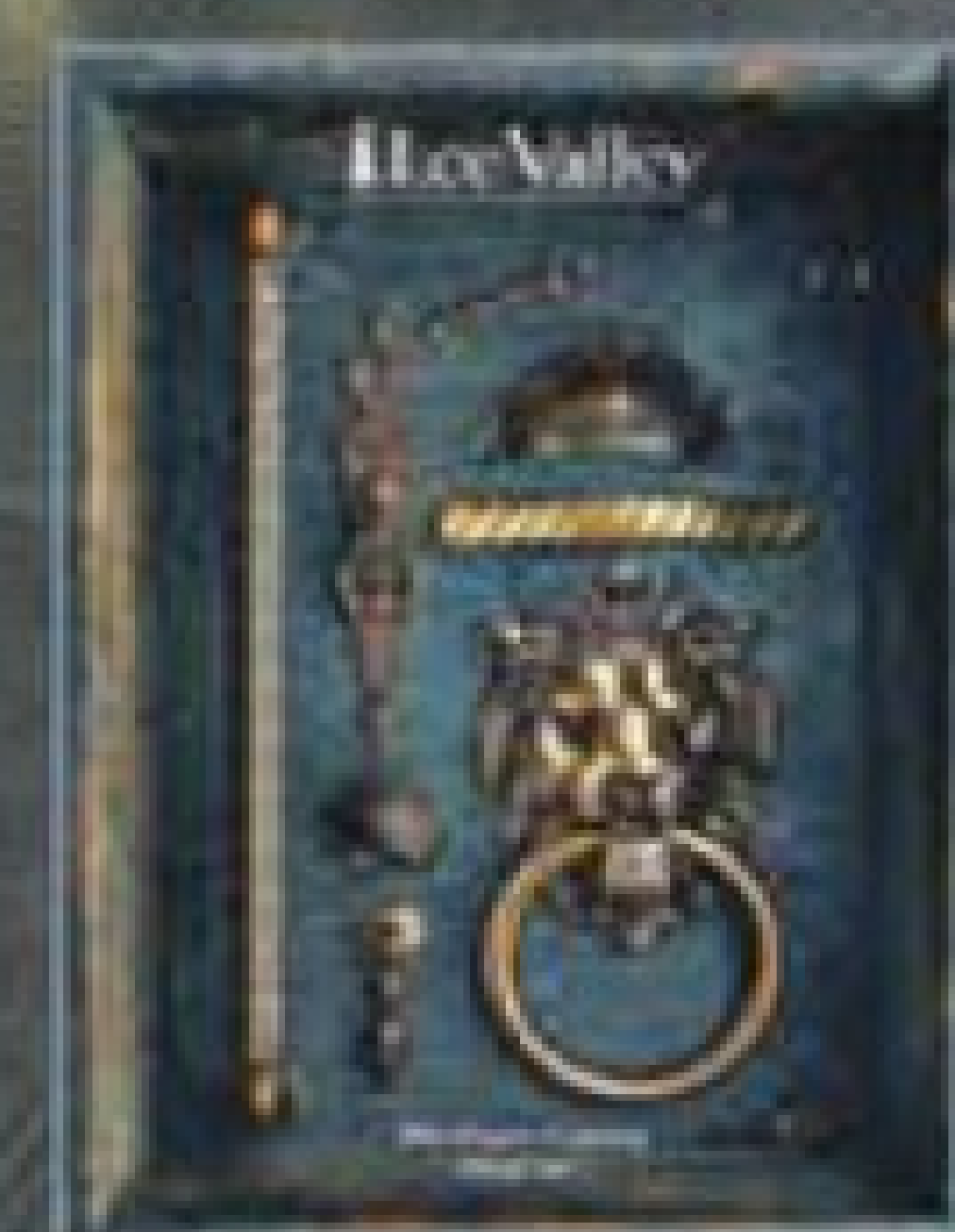
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Benchtop Drill Presses

By Chris Marshall

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Although obviously short in stature, a benchtop drill press can save you floor space and tool dollars while still delivering ample precision and power.

Whether you're drilling hinge cup recesses, hogging out a mortise, cutting a batch of wood plugs or countersinking some pilot holes, a drill press makes easy work of it all. Here's a versatile, accurate tool every shop should have. The question is, how much drill press do you really need? After testing eight benchtop models, I'll argue that it's less than we may think.

Case in point: I have a huge floorstanding drill press with a 3/4" chuck and a 1hp motor. This behemoth drills to the center of a 20" workpiece (drill presses are sized by the distance from the column to the center of the chuck, times two). It's a tank of a tool.

Even so, my drilling needs for projects are pretty typical. Rarely do I bore a hole larger than 2" or deeper than the thickness of 8/4 stock. Ordinary mortising and plug-cutting just don't require knuckle-dragging torque either. I've never chucked a bit shank larger than 5/8" in it — and even that size is unusual. Truthfully, aside from its nice big table, this drill press is just plain overkill.

While my machine is extreme, there's still a need for larger machines sometimes. Big hole saws or rosette cutters would probably stop most tabletop drill presses dead in their tracks. Deeper reach (called "swing") could be useful for centering holes on wide panels. If you want

to drill down into workpieces taller than about 14", you'll need a floor model's long column. But for most bread-and-butter shop tasks, I think a benchtop drill press is plenty. These tools can save you floor space and cash without sacrificing performance.

Test Tool Playing Field

When whittling down the list of possible test models, I asked for machines with at least 1/3hp and 12" swing. Manufacturers made their choices. That helps explain our slew of sizing, pricing, horsepower and features. Still, every one of these drill presses endured a torturous battery of hole-drilling in hardwood with big bits (see sidebar at right). All eight tools delivered clean results without stalling. It impressed me, especially those with modest motor sizes. So, picking a "Best Bet" tool really came down to which model offers the best combination of helpful features and overall ease of use for the money. Here's how each tallied up for me and which one deserves our "top dog" billing.

Craftsman 21914

Offering the second lowest price in this test group, Craftsman's 12" drill press comes well equipped. A digital readout on

A Grueling Drilling Test

Among a variety of "setup" tests, I measured flatness and front-to-back squareness of each machine's table. I also checked for runout (wobble) at the chuck by installing a precision shaft and taking readings off of a dial indicator while slowly rotating the spindle. Runout varied from .001" to .011", but that range of deviation from a



single axis of rotation didn't seem to transfer into noticeably smoother holes or out-of-round holes. My battery of drilling tests involved boring 50, 1 1/4"-deep holes in white ash with 1 1/2"-diameter Freud Forstner bits (a new bit for each machine). I inspected

the results for smoothness and consistent cutting depth.

Then, I switched to 1 1/2"-diameter spade bits and bored another 50 holes 1" deep. That provided good feedback about overall vibration and torque. Tough drilling challenges, to be sure. I made a LOT of hamster bedding drilling 800 holes!





A horizontal quill handle (left) minimizes wrist fatigue when drilling deep holes repetitively. Craftsman's digital depth readout (right) is easy to set and use when monitoring stopped-hole drilling.

Craftsman 21914

Swing: 12"
HP/Amps: 2/3; 6
Speed Range (RPM): 500-3000
Table Size: 10" x 10"
Spindle Travel: 3/4"; Chuck: 1/2"
Price: \$219.99; Weight: 96 lbs.
www.craftsman.com
800-383-4814

the pulley case allows you to evaluate drilling depth in imperial (decimal) or metric readouts easily while drilling, and it's intuitive to use. An LED articulating light helps brighten up the drilling area — always helpful — but the beam strength is pretty dim.

Laser crosshairs are gaining popularity on drill presses, and Craftsman's battery-powered version is easy to adjust when needed. I also appreciate the steel table fence provided here (the only test tool with one). My favorite gizmo is the horizontal quill handle that allows a more normal range of wrist motion when drilling (it was a big plus for making 100 holes!).

A couple of concerns surfaced: the table's rim was cracked (the replacement was flat and defect-free). Its tool base also seems undersized for a top-heavy

machine, so be sure to bolt it down. The single pulley drive belt was thinner on this machine than others, but it still kept the press from slipping during testing. All in all, Craftsman offers a user-friendly, affordable machine.

Delta DP350

On most drill presses, changing drilling speeds is a manual process of shifting belts between pulley clusters. It can be a grimy job, which is why some never bother doing it. Delta's continuous variable speed, controlled by a lever on top, makes the task easy as pie. Still, the feature needs a more descriptive display scale to help set speeds accurately.

The machine's larger ball knobs are nice, and the conventional gooseneck worklight is a standout feature. While this tool's

1/3hp motor is small, it still drove test bits through ash with moderate feed pressure.

On tasks such as mortising, it's important to set and hold a precise drilling depth. Delta's tool-free, knurled knob did the job, but double-check that it is snapped securely onto the depth rod threads so it doesn't shift as you work.

Delta provides a rather tiny T-slotted table here, and its gusseted and lipped casting limits your clamping options (a common problem with most

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A drill press is also

known as a pedestal, pillar, or bench drill, and is an offshoot of the electric drill — invented in 1889 by Australians Arthur James Arnot and William Blanch Bain. — National Archives of Australia, 1889

Delta offers speedier depth setting with a quick-release, knurled collar (left). An adjustable task light (right) accepts standard incandescent bulbs for better illumination where you need it most.



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drill presses). But you can overcome that by attaching a larger shop-made table. Still, a bigger table and motor would sweeten the \$240 price.

General Int'l 75-030

General International's 14" benchtop was a tall, smooth operator in testing. It showed excellent fit and finish in its castings and milling and has a silky feed action. The round table was slightly cupped in the center but locked solidly; so did the support arm to the machine's rack-and-pinion column.

General provides plentiful features: a 40-watt task light socket in the head, a clip to stow the chuck key (every press should have this!), 5/8" chuck and twin lasers to help zero in on centerpoints. Due to Canadian safety regulations, there's a plastic guard around the chuck that flips up for bit changes. You

General Int'l 75-030

Swing: 13 3/4"
HP/Amps: 1/2; 8
Speed Range (RPM): 280-3000
Table Size: 11 3/8" Dia.
Spindle Travel: 3 1/8"; Chuck: 5/8"
Price: \$299.99; Weight: 105 lbs.
www.general.ca
514-326-1161



General provides an on-board chuck key clip (left) — a detail that should come standard on every drill press. A spring-loaded chuck guard (right) could protect the user from injury and isn't cumbersome to use.



The author preferred Grizzly's double hex nut depth stops (left) for rock-solid depth control. Lever-style motor adjustment (right) makes belt swapping more convenient.

also need to lift a hinged kill button to turn on the power.

While I like the pair of tool-free collars that set drilling depth, they allowed the press to creep about 1/16" deeper over 100 holes during testing. The 75-030 seems a bit pricey at \$299, but it was a sturdy and apt performer overall.

Grizzly G7943

The G7943 has a "big" drill press pedigree since, save the shorter column, its specs match the floor model 14" G7944. It comes with a huge 3/4hp motor for heavy-duty work, a 5/8" chuck and the largest square table of the group. At a hefty 142 lbs., this machine's cast iron soaks up vibration well, making it pleasant to operate hole after hole. No "diet" features here.

Although switching between the tool's 12 speeds is a manual task, the motor slides back and forth with a lever — a detail that makes the job easier than other tools with motors that shift on spring-tensioned rods (Craftsman, General International and



Grizzly G7943

Swing: 14"
HP/Amps: 3/4; 9
Speed Range: 140-3050
Table Size: 11 3/8" x 11 3/8"
Spindle Travel: 3 1/4"; Chuck: 5/8"
Price: \$275; Weight: 142 lbs.
www.grizzly.com
800-523-4777

Shop Fox). Twin hex nuts lock depth settings securely — the best stop system in my book — and overmolds on other controls make routine adjustments more comfortable. A built-in light socket takes up to a 60-watt bulb to keep the drilling area bright. There's a lot to like about this "brass tacks" driller, and its combination of no-nonsense features should deliver a sound investment.

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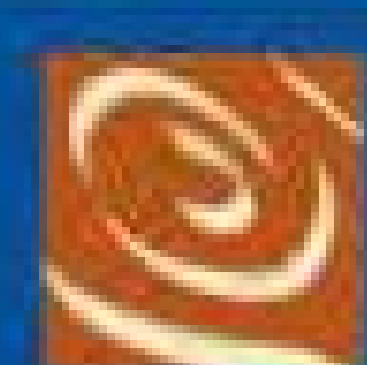
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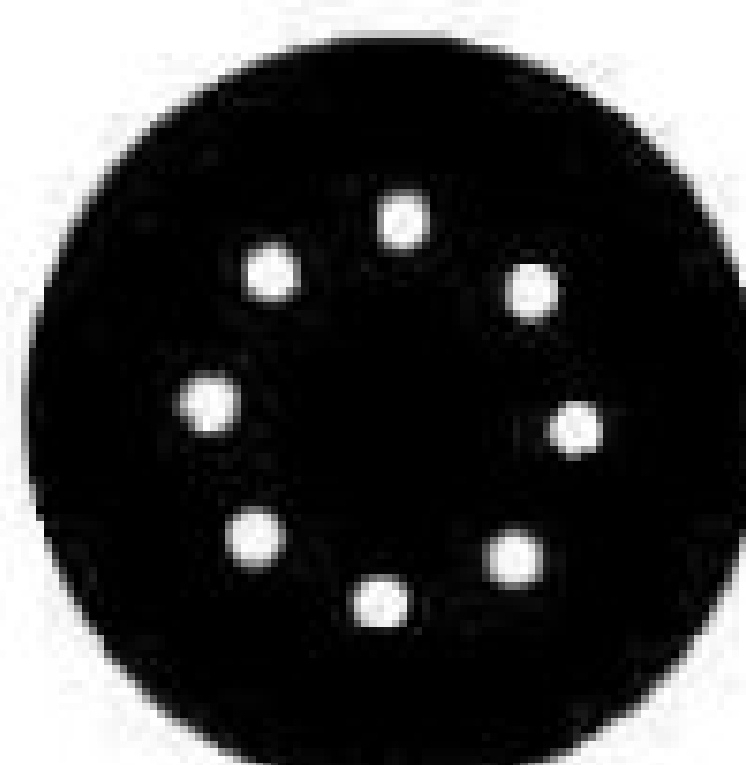
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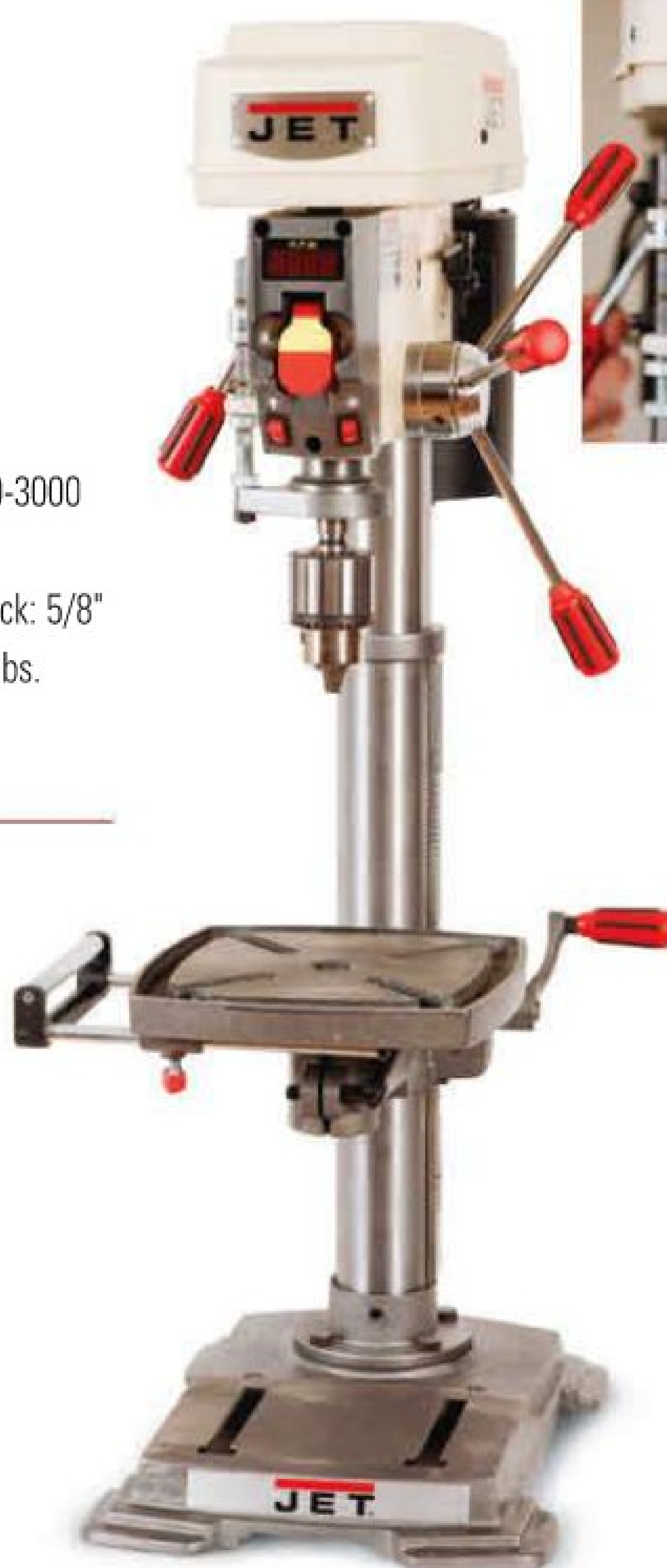
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JET JDP-12

Swing: 12"
 HP/Amps: 1/3; 5
 Speed Range (RPM): 500-3000
 Table Size: 9½" x 9½"
 Spindle Travel: 3⅞"; Chuck: 5/8"
 Price: \$339; Weight: 88 lbs.
www.jettools.com
 800-274-6848

**JET JDP-12**

The upsides to this JET are its truckload of standard items: continuous variable speed; digital readout to track bit rpm; 5/8" chuck; crisp laser crosshairs powered by the tool — no batteries; and a table roller that extends horizontal support to a generous 16½". The table casing is even easier to clamp to, thanks to a 1½" flat area around the rim. A screw-in LED tasklight is also supplied. All pluses.

On the flip side, a few little annoyances got in

Rotating Rikon's collar type depth stop (left) enables you to set drilling depth off of a convenient scale. The tool's 5/8"-capacity chuck (right) accepts a wide range of Forstner and other bit or cutter sizes.



JET's digital readout (left) helps you keep tabs on spinning bits when levering the continuous variable speed up or down. That feature is delivered through shiv style pulleys (right) that open or close automatically to change spindle speeds.

the way. Most of the handle caps were prone to falling off. The depth stop collars turned roughly on extra flashing. And its 1/3hp motor came close to stalling several times in spade bit testing. More horsepower would add value to the top-end price here and make this tool's many virtues outshine a couple of minor quirks.

Rikon 30-120

At 42", Rikon towered over others: it can drill into a workpiece up to about 14" tall. A 1/2hp motor, big chuck and stout belt drive were up to tough testing. The tool had impressively low spindle runout (only .001") and a spot to stow the chuck key — nice.

This machine has a cast feed handle that I found less comfortable to use

repetitively. Rubber knobs are easier on the palm. It also nearly touches the motor tension lever behind, which grazes your fingers if you use the back handle. Ouch.

The depth-adjust collar stopped the chuck accurately, but its flip-lock scraped the head casting occasionally. My verdict: A few design tweaks and a task light would help refine this \$319 contender.

Continues on page 66 ...

**Rikon 30-120**

Swing: 13"
 HP/Amps: 1/2; 8
 Speed Range (RPM): 220-3600
 Table Size: 11⅜" Dia.
 Spindle Travel: 3⅞"; Chuck: 5/8"
 Price: \$319; Weight: 121 lbs.
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Benchtop drill presses

have been manufactured and sold in the U.S. since at least the 1930s, and possibly before. They are listed among the products of the E.C. Stearns and Company of Syracuse, New York, formed in 1877. — Old Woodworking Machines (www.owwm.com)

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Ryobi DP121L

Want a full-featured drill press for a drill/driver price? Ryobi could be your machine. It comes with handy variable speed, digital rpm readout, lasers, task light and the most clamp-friendly table of them all. In use, the feed handle knobs were too small for a larger hand. Otherwise, this modestly sized entry kept pace with the bigger tools.

One oddity to note: On my test tool, the table support handle didn't seat properly in the casting, which made the support nearly impossible to lock securely. Craftsman's lever fit it, which quick-fixed the problem. Still, if we gave



A third pulley and gear (left) changes the Shop Fox over from drilling to spindle sanding. The table has a through hole with interchangeable and variable sized insert rings for sanding drums (right).

"best value" awards, the DP121L would deserve it.

Shop Fox W1668

Speaking of value, how about a drill press that not only provides a big 3/4hp motor and 5/8" chuck but also the versatility of morphing into an oscillating spindle sander? Shop Fox packs two tools in one in the midpriced W1668. Very useful indeed.

As a drill press, this machine's nice fit and finish and solid performance in testing left me with no real gripes. I like the double-hex nut depth stop. The tool could use a task light and lever handle for speed changes, but those aren't deal breakers.

A third pulley between the two main clusters activates the 3/4" oscillating motion to turn the press into a sander. Installing a third drive belt makes the changeover easy. The table has a through hole for sanding drums, and a set of them with sandpaper comes standard. A dust port helps

PHOTOS AT LEFT: Ryobi's twin laser beams (left) are adjustable and help pinpoint your drilling target. A flat table edge (right) makes clamp installation easier than other rimmed styles.



Shop Fox W1668

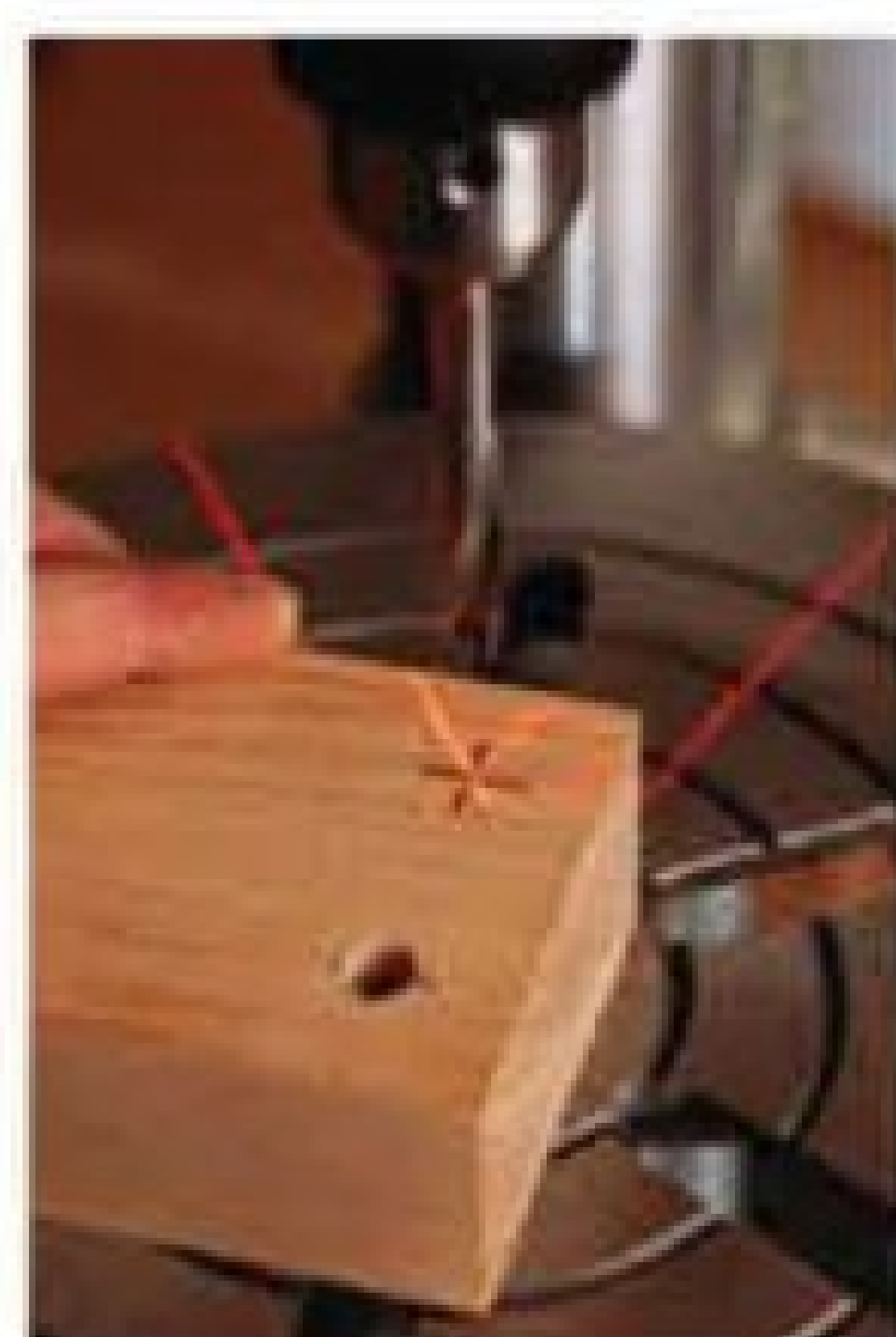
Swing: 13 1/4"
HP/Amps: 3/4; 9
Speed Range: 250-3050
Table Size: 12 3/8" Dia.
Spindle Travel: 3 1/4"; Chuck: 5/8"
Price: \$255-\$260; Weight: 130 lbs.
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contain sanding debris. The On/Off switch placement was unusual, but I see no particular safety issues with the side location.

And the Winner is...

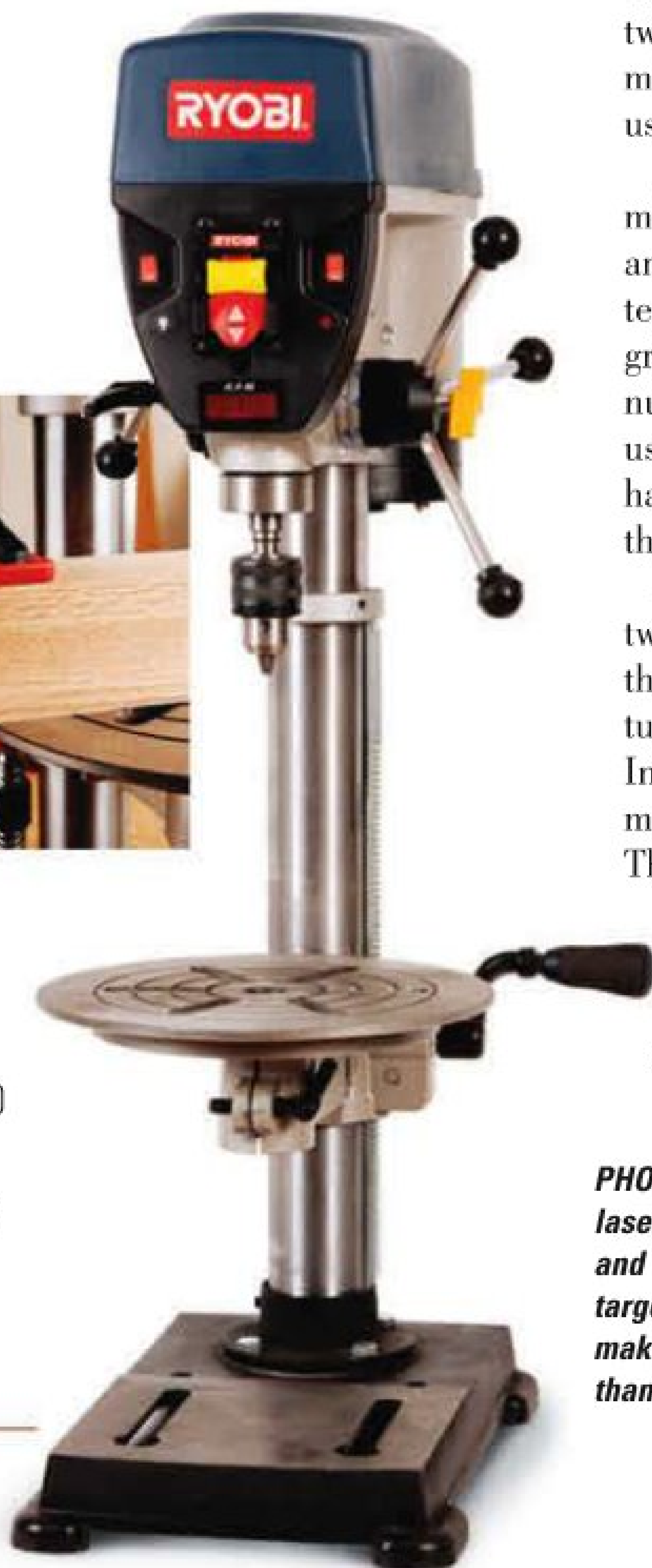
Shop Fox. I use a spindle sander as much as a drill press, and maybe more. There are several solid buys in this test, but a tool that provides real dual functionality wins my "Best Bet" accolades.

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



Ryobi DP121L

Swing: 12"
HP/Amps: 1/3; 5
Speed Range (RPM): 500-3000
Table Size: 10 3/4" Dia.
Spindle Travel: 3"; Chuck: 1/2"
Price: \$179; Weight: 91 lbs.
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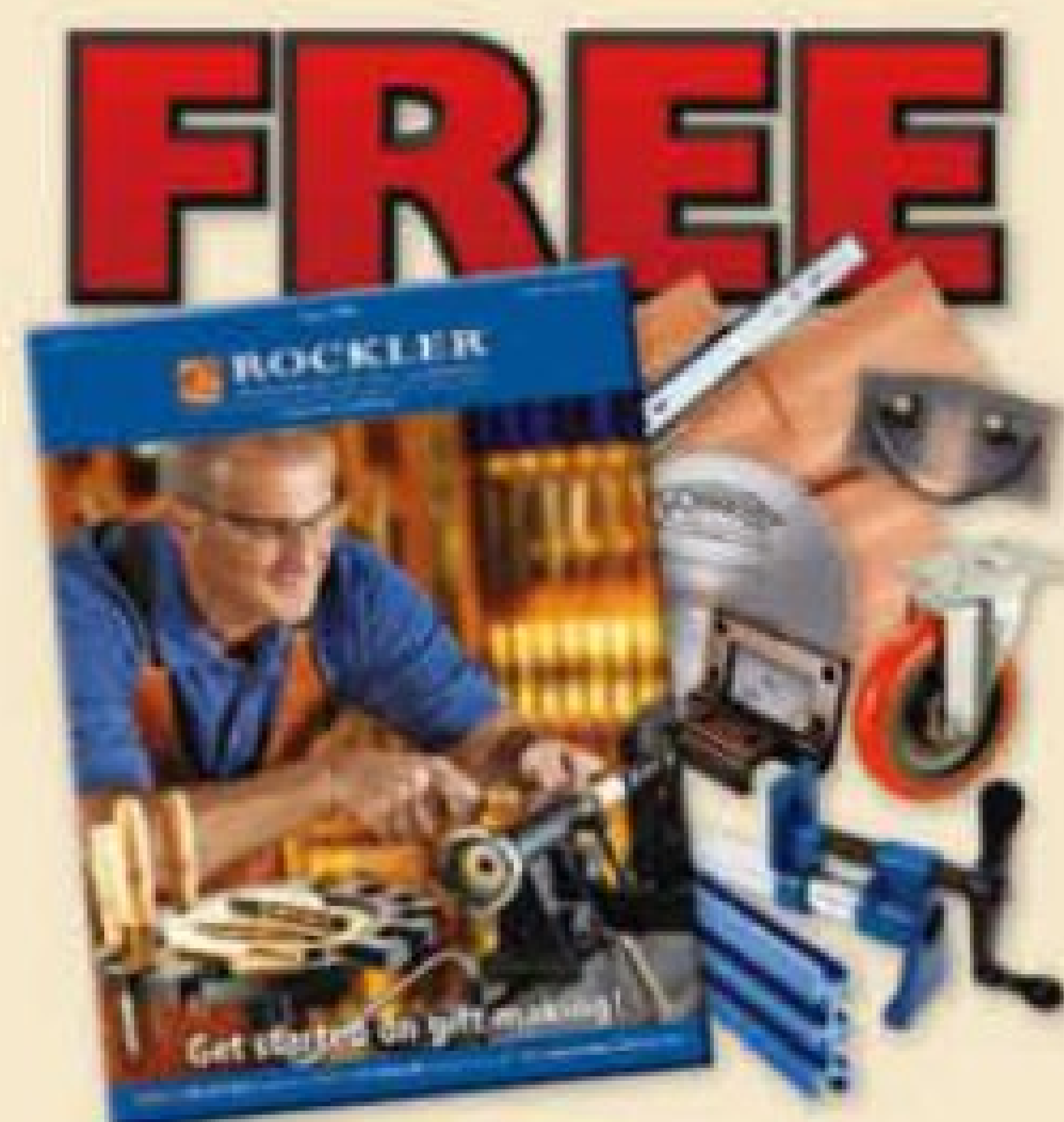
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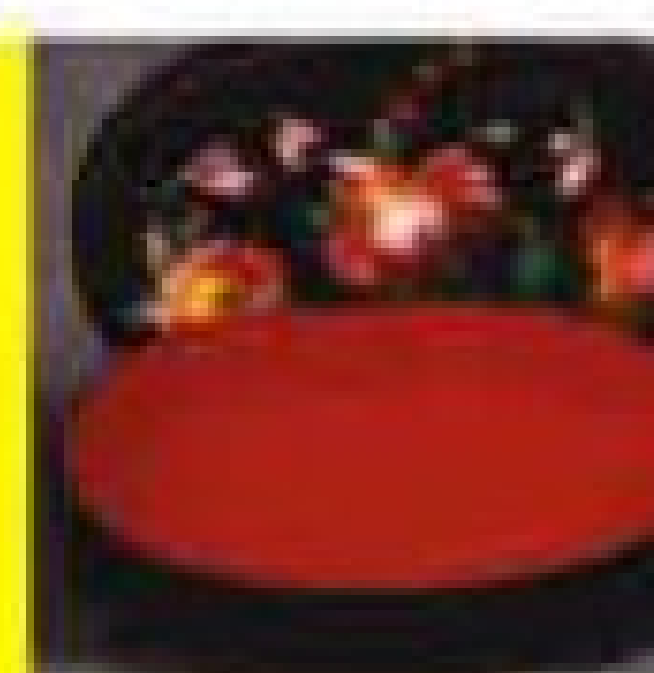
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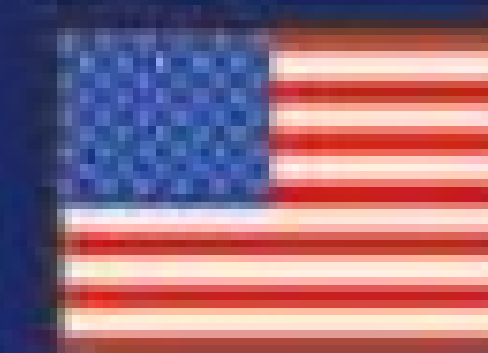
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Woodturning

Getting Started with Hollowing Tools

By Ellis Walentine

Turning hollow forms is easy once you get the hang of it, but you'll need a few specialized tools and some practice.



Scrapers

About 30 years ago, a young turner named David Ellsworth moved to our Pennsylvania neighborhood. He was a rising star in the woodturning world, known for his delicate “hollowform” vessels — as light as a feather, with walls as thin as 1/8" and just one small hole at the top.

I was mystified as to how anyone could remove all that wood through such a small entry hole. The secret, it turns out, was the combination of specialized tools and techniques that David had devised — straight tools for plunging into the center of a vessel and bent tools of various curvatures for excavating the rest of the interior.

As I discovered for myself, the actual hollowing process is not as difficult as it might seem. There's definitely a learning curve, though, and you can count on some occasionally dramatic failures, so don't forget to wear eye protection when you work. Once you've hollowed a few pieces, you'll begin to get a feel for the tools and techniques. The results are worth the investment.

The Beauty of Hollowforms

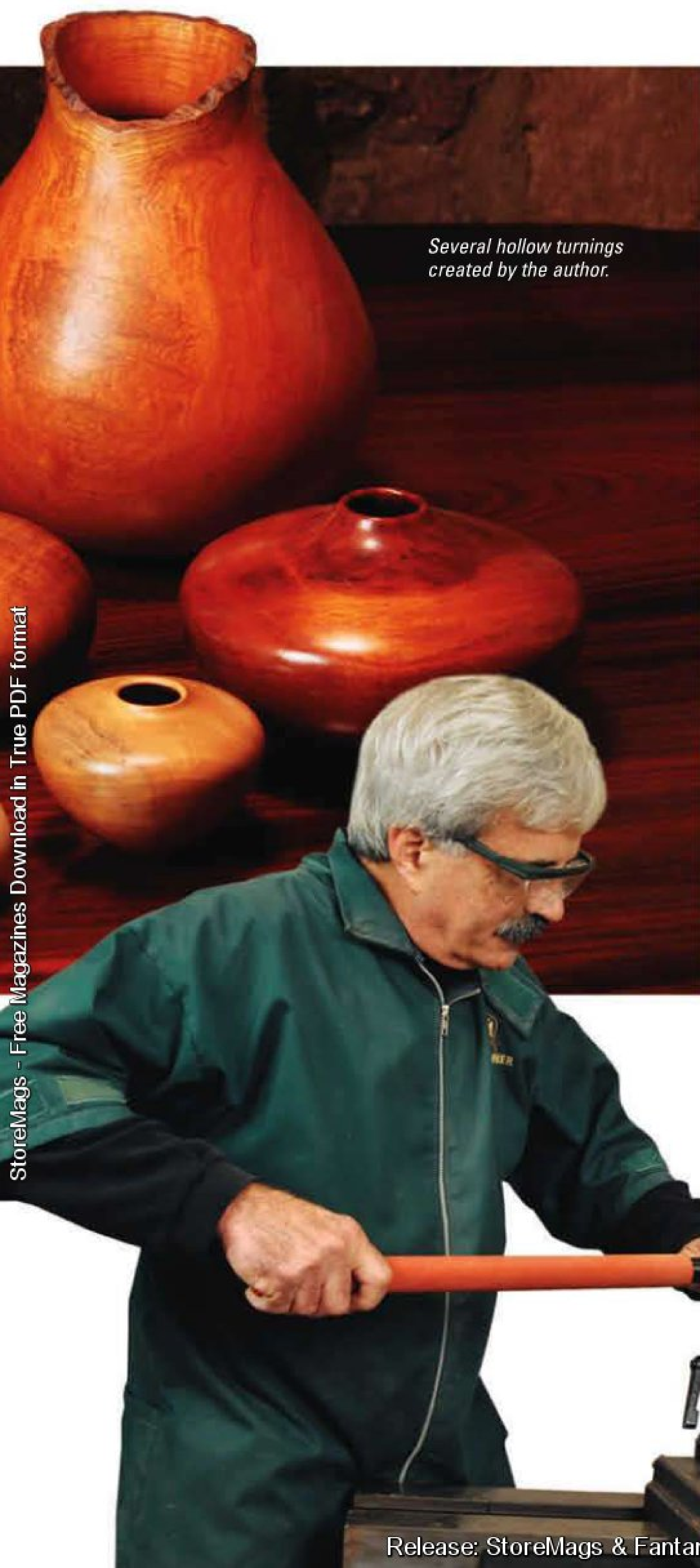
The outward appearance of any turned object depends on the character of the wood itself, its shape and any decorative treatments you care to add. On an open bowl, the inside is the most visible part, though if you lower your point



of view, you can see the outside shape and the figure of the wood as well. Hollowforms, on the other hand, are visible everywhere but the inside, so you can really showcase a dramatic piece of wood. They also provide an excellent canvas for further decoration, such as piercing, carving or woodburning. Segmented vessels, stack-laminated from several species of wood and hollow-turned, are also very popular.

Types of Hollowing Tools

As hollow turning has become more popular, quite a few manufacturers — including several well-known turners — are serving up a bewildering array of tools for hollowing. Despite the variety, they all hark back to the same basic principles: straight tools for turning the center and bottom of a form, bent tools for the sides and shoulders, and shanks of varying lengths and diameters depending on the



Several hollow turnings created by the author.

Carbide
Insert Tools



depth of the vessel being turned. Where they differ is in the design of their cutting tips, which fall into three general categories depending on their shape and cutting action:

Scrapers come in a variety of shapes and sizes, many with interchangeable or replaceable tips. (See photo, opposite page, far left.) Typically, scrapers are flat on top and have relatively blunt relief angles. They cut by a scraping action against the inside wall of the workpiece, leaving a roughened texture on most woods. Scrapers are generally presented dead horizontal to the center of the workpiece. The straight scraper is always held horizontal during cutting, while the bent scraper can be dipped downward a few degrees on finish cuts to give a shearing action.

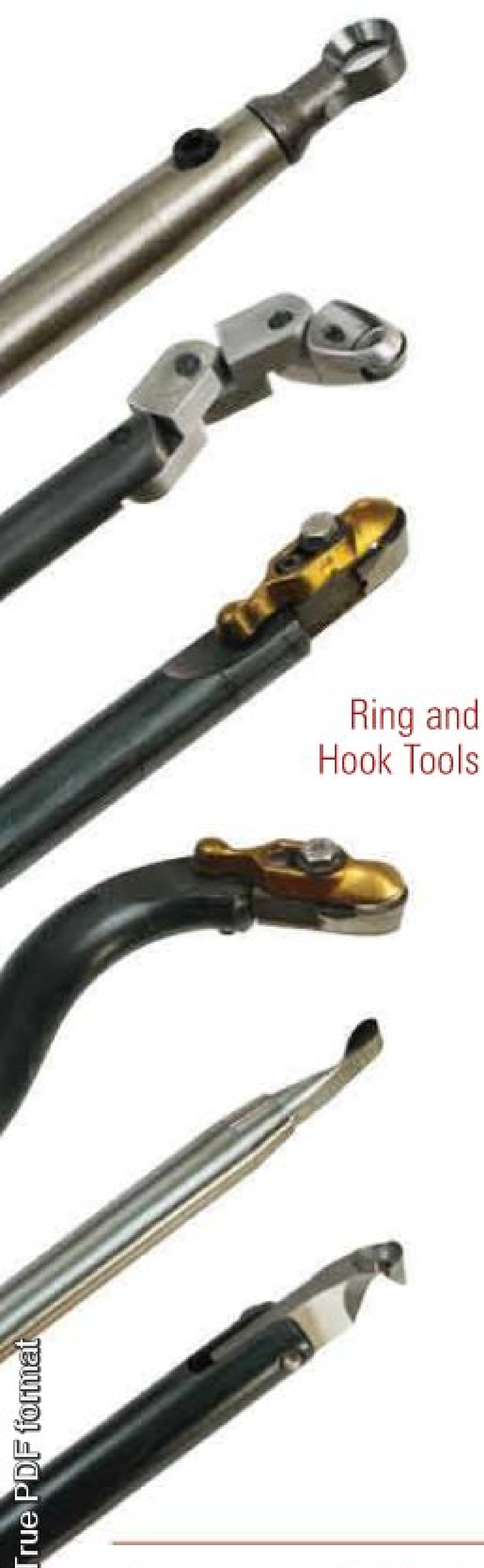
Carbide insert tools have a razor-sharp, cup-shaped cutter screwed to the tip of the tool shank. (See photo, above right.) The replaceable cutter tip may be rotated to expose a fresh edge when needed. These tools are usually tilted at an angle to the surface being cut to create a shearing action that leaves a smooth surface, even on stringy or difficult wood.

Insert cutters should never be presented in a level orientation

Turning Wood

over a moving lathe to shape it into various designs has existed since at least the time of the ancient Egyptians.

—Association of Woodturners: Great Britain



Ring and Hook Tools

because their aggressive cutting edges will almost certainly catch, sometimes dramatically. Instead, the tip is cocked or skewed downward and then brought up gradually into the work until the edge begins to engage, so the cutting is always a shearing action.

Ring and hook tools are the most aggressive of the cutters, with edges that are more acute than the other styles of tips. (See photo, left.) The acute cutting edge makes them best suited to slicing endgrain and less appropriate for cross-grain work. It also makes these tools grabby and apt to dig in and catch if you aren't careful. For this reason, many of the tools in this category come with adjustable shields over the cutter to limit the depth of cut.

The Hollowing Process

Whichever tools you use, the basic approach for creating a hollowed vessel is

straightforward: Turn the outside shape of your vessel first, then hollow out the inside until you've reached the desired wall thickness. There are other factors involved, of course, and some turning experience is a must, but here are some general pointers to get you started:

Mount the Workpiece:

Mount the piece securely on a faceplate, screw chuck or scroll chuck. It's a good idea to use a live center in the tailstock to help support the piece as you turn the outside shape, usually with bowl gouges.

I prefer to turn green wood, because it cuts a lot easier and generates less heat than dry wood, but plenty of people turn dry. You can orient the workpiece with the grain either parallel or perpendicular to the axis of the lathe. Most turners prefer perpendicular, or "bowl," orientation, with or without the pith included. Green wood that is turned

from "green to finished" in one session tends to shrink to a slightly irregular or ovoid shape after you've hollowed it, which can be quite interesting. Dry blanks, of course, will stay more circular after they're turned.

Open the Center:

Begin the hollowing process by creating a hole in the center of the workpiece, either with a drill bit mounted in a chuck in the tailstock or with a straight scraper tool plunged in from the end. You don't need to bore all the way to the bottom until after you've hollowed the upper areas of the form.

Work Your Way Down:

Hollow the inside of your vessel with a combination of straight tools near the bottom and bent tools on the sides and in the shoulder area. Begin near the top and continue downward in increments, working the tip of the tool in whichever

Captured Hollowing Systems

Hollowing with handheld tools has its limitations, because the leverage exerted on the tool gets stronger the farther you cantilever the cutting tip out over the tool-rest. A less intimidating, more controlled alternative, especially if the piece is deeper than 6" or so, is to use a "captured" hollowing system.

These systems have a second tool support that prevents the back of the tool from lifting up in the event of a catch and ruining your work. You can

add longer and heavier boring bars to extend the cutter for deeper hollowing. At the business end, captured systems use the same



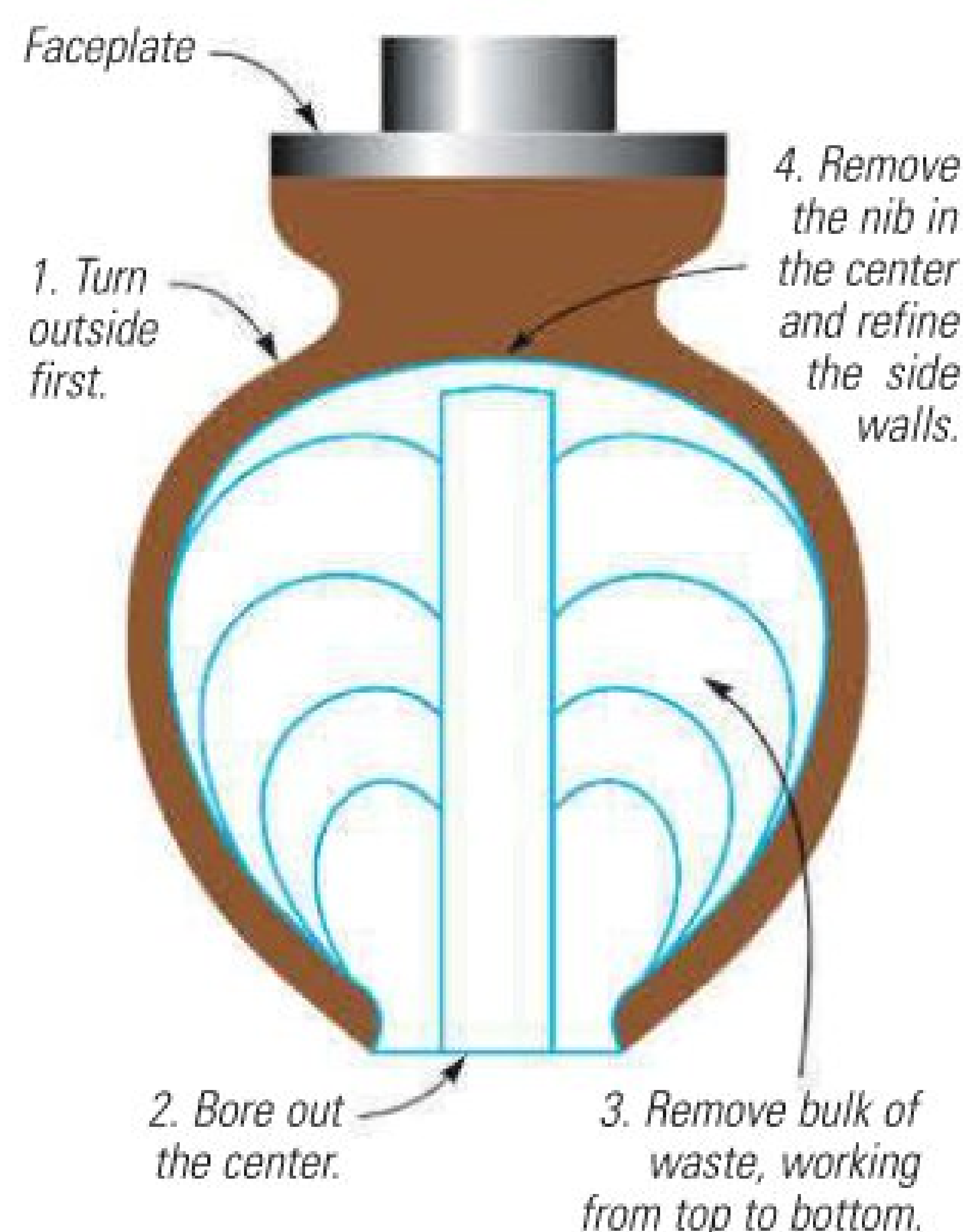
With a heavy-duty additional tool support and a laser that exactly locates where your cutter is, a captured hollowing system has its advantages. (Note ... the lathe is not turned on for this demo photo.)

types of tips that you find on handheld tools, and replacement cutters are often interchangeable.

Another advantage of captured hollowing systems is that most of them offer a laser attachment that shows you exactly where the cutting edge of your tool is at any given moment. The laser pointer is attached to an arm mounted on the tool shank,

with the beam aimed either directly at the cutting edge or offset by some known distance, so you can gauge the wall thickness precisely.

Hollowing a Vessel



The basic steps in hollowing a vessel are laid out in this diagram. As always, practice is the key to mastering any new technique.

direction works best for you. (See Drawing above.)

You'll have to stop frequently to clear the chips that accumulate inside the vessel, otherwise they will eventually seize up around your hollowing tool and could result in damage to your vessel or worse. I stop the lathe whenever the chips need clearing, and then blow them out with a long-nosed air gun attached to my compressor.

Many turners like to hollow the upper neck and shoulder areas before continuing to the lower sections of a piece. This method reduces vibration and chatter and provides the best support for the delicate walls of your vessel as you approach final wall thickness.

It's a good idea to check that wall thickness frequently, especially when you get close to your target thickness. A piece of stiff wire bent into a rudimentary caliper works fine for this, although more elaborate gauges are available.

Once the inside of the piece has been more-or-less cleared out, you can clean up the inside walls of the vessel with very light and careful passes until you reach the uniformity you want. Then, reverse-chuck the piece in a vacuum or jam chuck to finish-turn the bottom.

Ellis Valentine is the originator and host of WoodCentral.com and a long-time compulsive woodturner.

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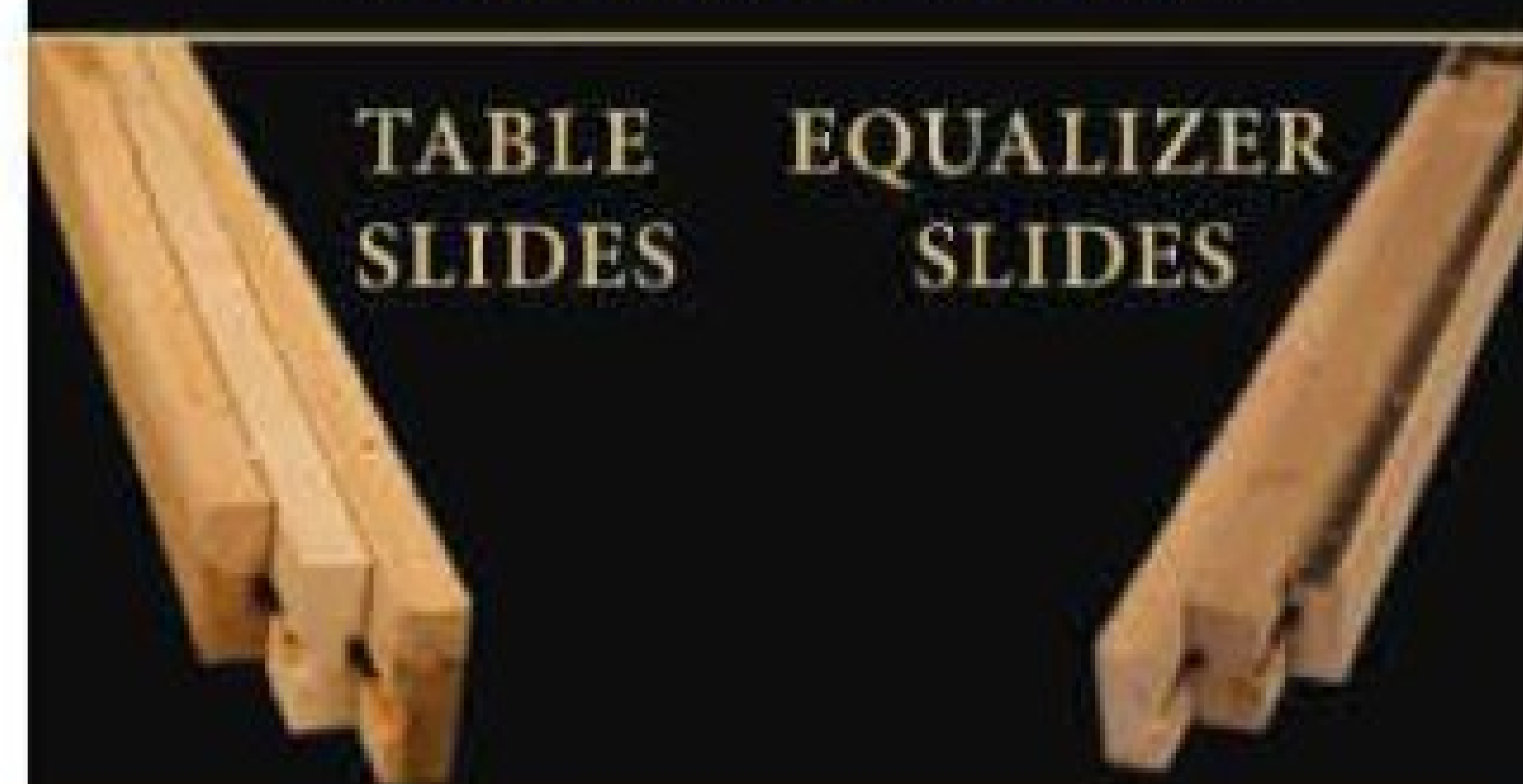
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Tune Up Your Table Saw

By Sandor Nagyszalanczy

Power Tool Tune-ups: 2011 Schedule

Table Saw

February

Band Saw

April

Jointer

June

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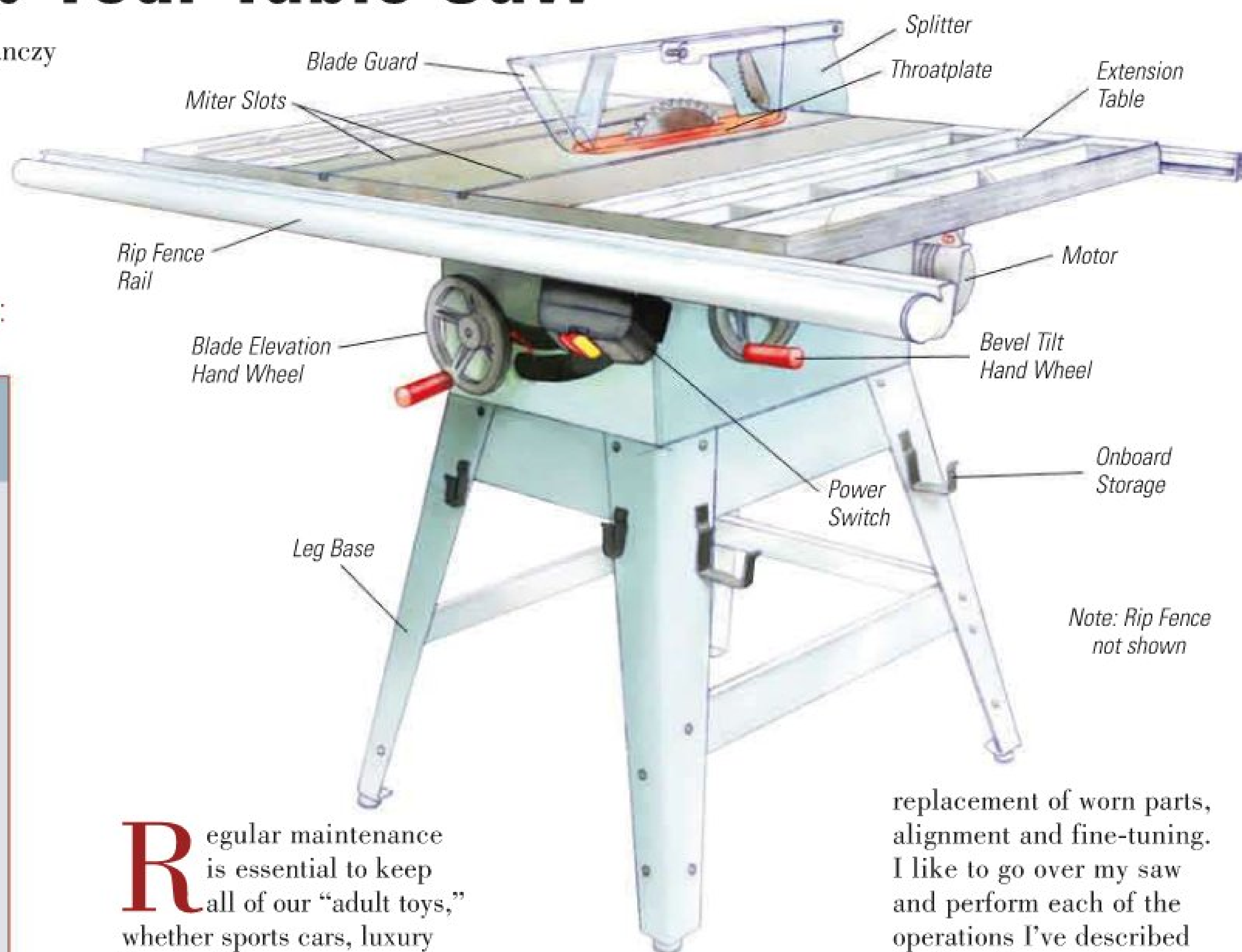
August

Planer

October

Dust Collection

December



Regular maintenance is essential to keep all of our “adult toys,” whether sports cars, luxury boats, table saws — or any power tool — operating at their best. A well-tuned tool is a pleasure to use. A poorly maintained one is, at best, inaccurate and, at worst, can cause a serious accident.

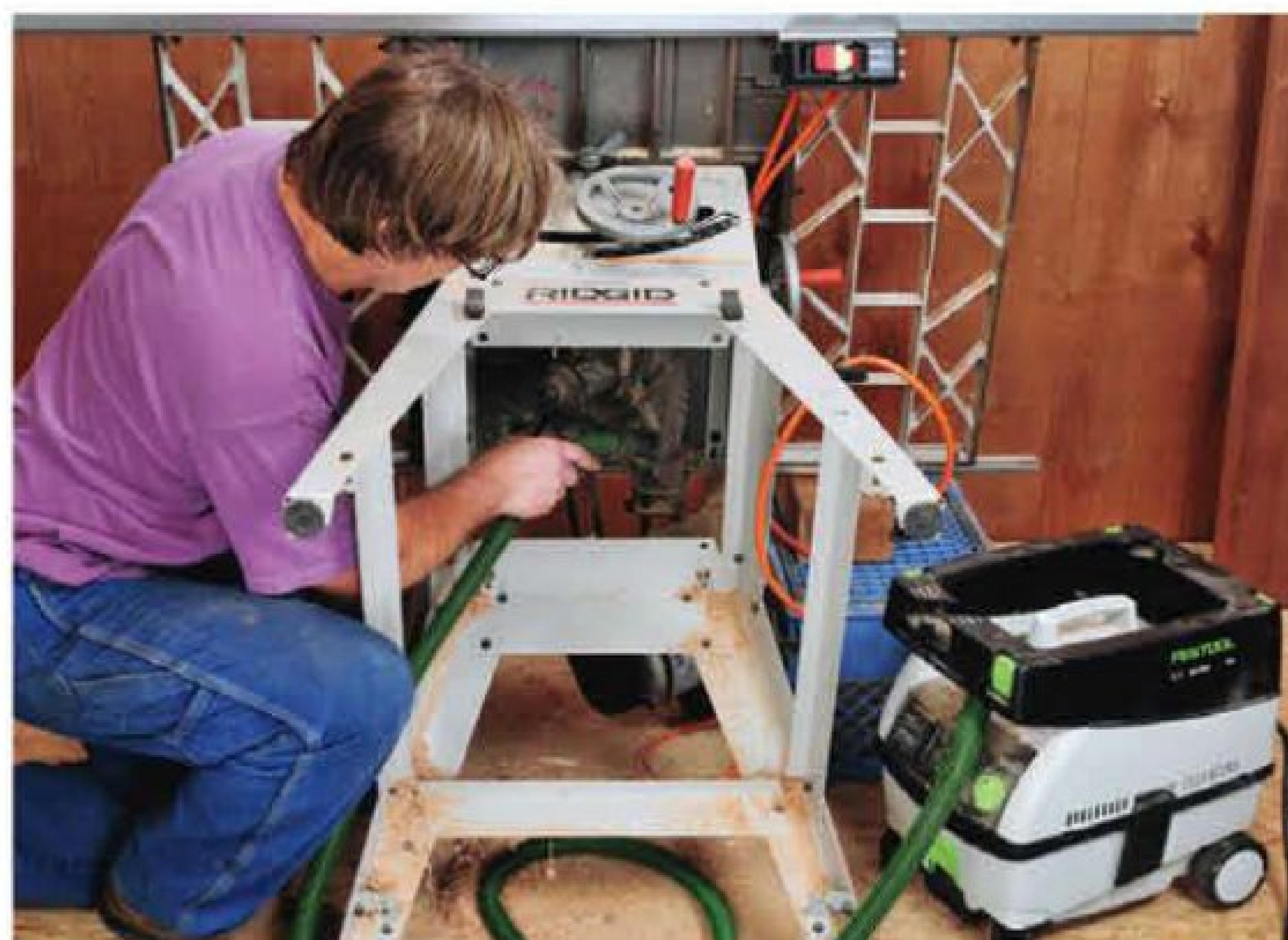
Keeping a table saw in top-notch condition isn't difficult; it just takes a bit of attention in the form of regular maintenance, including cleaning, inspection,

replacement of worn parts, alignment and fine-tuning. I like to go over my saw and perform each of the operations I've described in this column at least once every six months — more often if I'm using the saw all the time. It's also prudent to go through most of these procedures on a brand-new saw right after you assemble it. Good maintenance will keep any kind of table saw — cabinet, contractor's or portable — performing both accurately and safely.

Cleaning the Guts

Sawdust and gunk build up on a table saw's mechanical components, like the trunnion sector and worm gears, angle stops and the mechanism that raises and lowers the blade. This makes adjusting the saw sluggish and can even lead to inaccurate settings, such as when returning the saw to square.

To clean, unplug the saw from power and take off any dust collection hoses or catch bins. Carefully tip the saw



Inverting a table saw to clean it is a lot easier than trying to reach up underneath and have sawdust fall in your face. And removing debris with a vac rather than an airhose means you aren't blowing dust all over your shop — only to clean it up again.



Use a dry lubricant for your table saw. Flying sawdust constantly bombards the insides and can stick to wet lubricants like greases, oils or non-drying sprays (e.g., WD-40) and eventually gum up the works.

backwards and rest the table's back edge on a pair of sturdy boxes, or flip a lighter portable saw over onto its top (don't let a saw's motor contact the floor). To loosen built-up, caked-on dust and oily gunk, scrub surfaces with a brush that has either firm nylon or medium-stiff brass or steel

bristles. For the trunnion and gear teeth, you may need to dip your brush in a non-flammable solvent degreaser, such as LPS T-91. Pry gunk out of narrow slots and cavities with a thin wood stick or screwdriver. Next, use a strong shop vacuum to suck up debris from all

surfaces. For hard-to-reach spots, fit the end of the vac's hose with a crevice tool. While the saw is inverted, you should also vacuum the saw's motor housing and electrical switches and junction boxes. Fine dust built up in these areas can actually ignite from a tiny spark and cause a shop fire.

Lubrication

Once the saw's internal mechanisms are clean, it's time to lubricate them, so they'll operate smoothly and make adjustments easier. Coat the trunnions, gears, screw threads and other working parts with a dry lubricant, such as powdered graphite, or a drying spray lubricant, such as Boeshield T-9® or LPS 1®.



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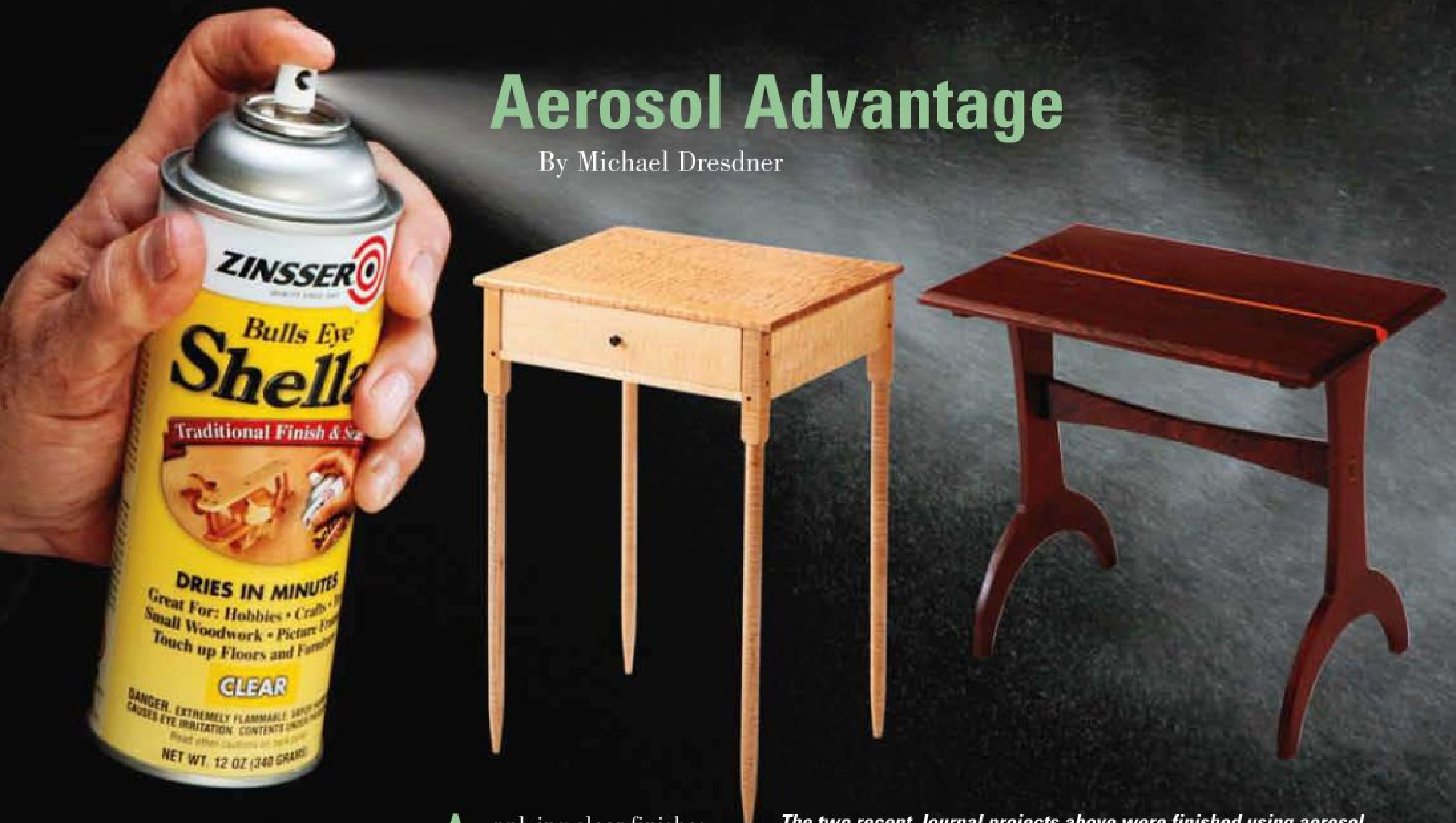
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Finishing Thoughts

Aerosol Advantage

By Michael Dresdner



The two recent Journal projects above were finished using aerosol cans of finish. Both had a few coats of spray shellac, followed by spray can-delivered lacquer to add durability.

Antique Spray Cans?

The basic concept behind the aerosol spray can was developed around 1890 in France. Back then, it was not used for paint, but for carbonated beverages.

CONTACT US

with your "Finishing Thoughts" by writing to Woodworker's Journal, 4365 Willow Drive, Medina, MN 55340, or by emailing us at: finishing@woodworkersjournal.com. Please include your contact information with your thoughts or questions.

Applying clear finishes with aerosol cans is quick, easy and, considering the wide range of finish options available, surprisingly versatile. Granted, elegant spray rigs may be more trendy, but "rattle cans" offer a much thriftier path to great results.

Almost every common clear finish is available in aerosols, including shellac, lacquer, oil-based polyurethane and water-based polyurethane. In fact, you can also buy tinted clear coats to add just a bit more color or correct a less than ideal stain job.

Using spray cans is completely intuitive: simply aim and pull the trigger. There's no mixing needed and no cleanup afterwards, save to clear the tip. Do that by turning the can upside down and spraying until only air comes out. Admittedly, that small button can get tiresome to your finger. A spray can trigger, available where aerosols are sold, is

a worthwhile purchase, adding a more comfortable gun-type handle that won't cause finger cramps.

Curb Your Enthusiasm

On flat surfaces, spray even coats by constantly moving the can in a straight line and overlapping each pass about half the width of the spray fan. Stop when the wood is just wet, and before wet turns into sags or runs. To get an even coat on small round objects, like knobs and finials, mount them on a threaded rod or dowel. Spray while spinning them at slow speed in a hand drill or on a lathe. Drape the lathe bed with plastic sheeting to protect it from overspray.

As handy as they are, aerosols do have one Achilles' heel; the finish inside, while fast-drying, is highly diluted. That implies two things: you'll

need more coats, which requires patience, and it's harder to make the more absorbent end grain fill up as quickly as the flat grain areas. You're on your own developing patience, but here's a trick to deal with the end grain problem.

Seal and Wipe First

Before using the aerosol, liberally flood the raw wood with Zinsser SealCoat™ and wipe it off while it's still wet. Let it dry and scuff lightly with 400-grit paper. No SealCoat? You can do the same trick with whatever finish is in your aerosol can: spray way too wet, then pack the end grain with the excess finish while wiping it off the rest of the surface. Either way, one wiped coat will save you time and get you to a much smoother surface faster.



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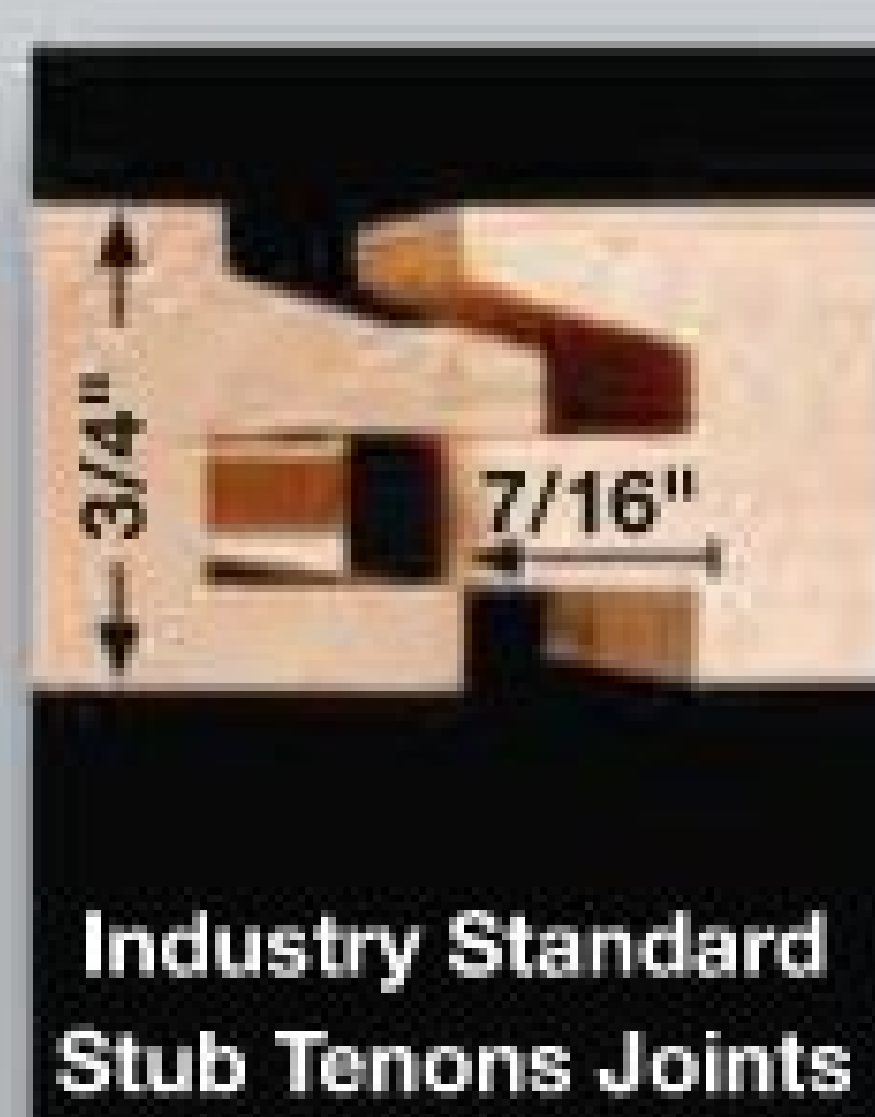
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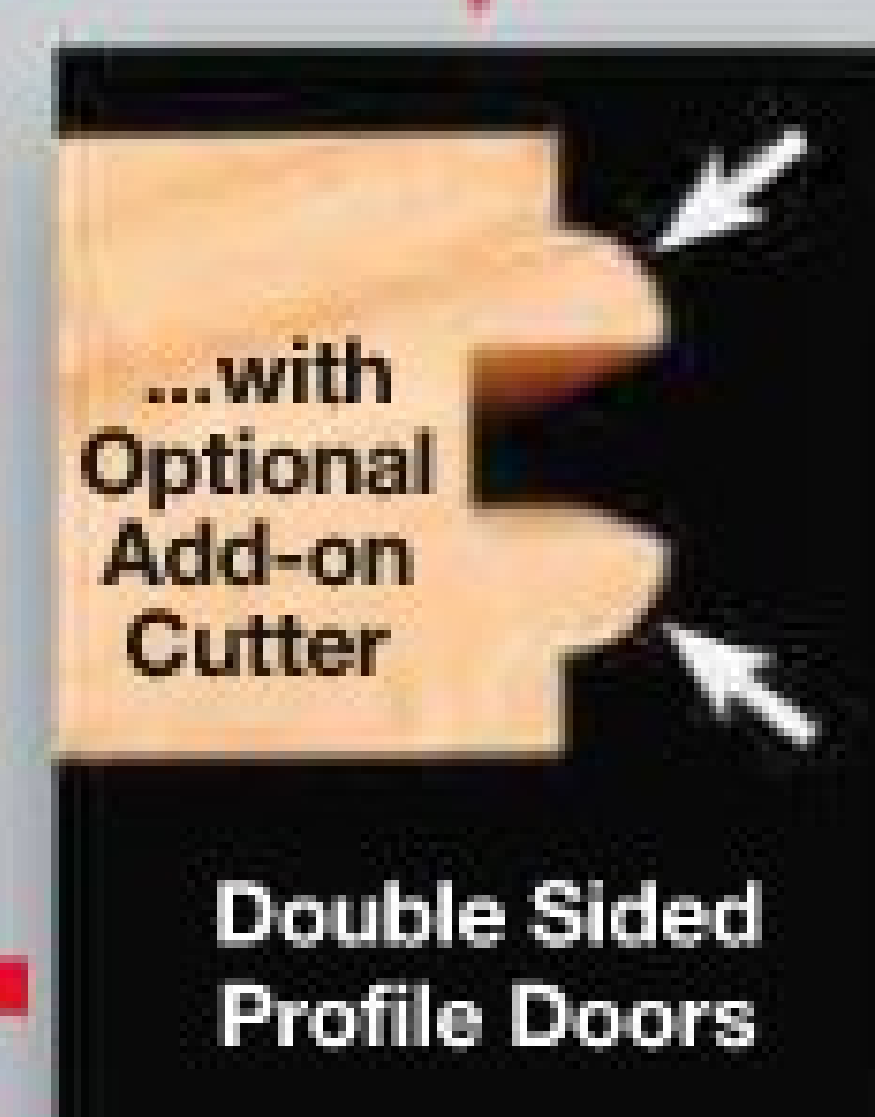
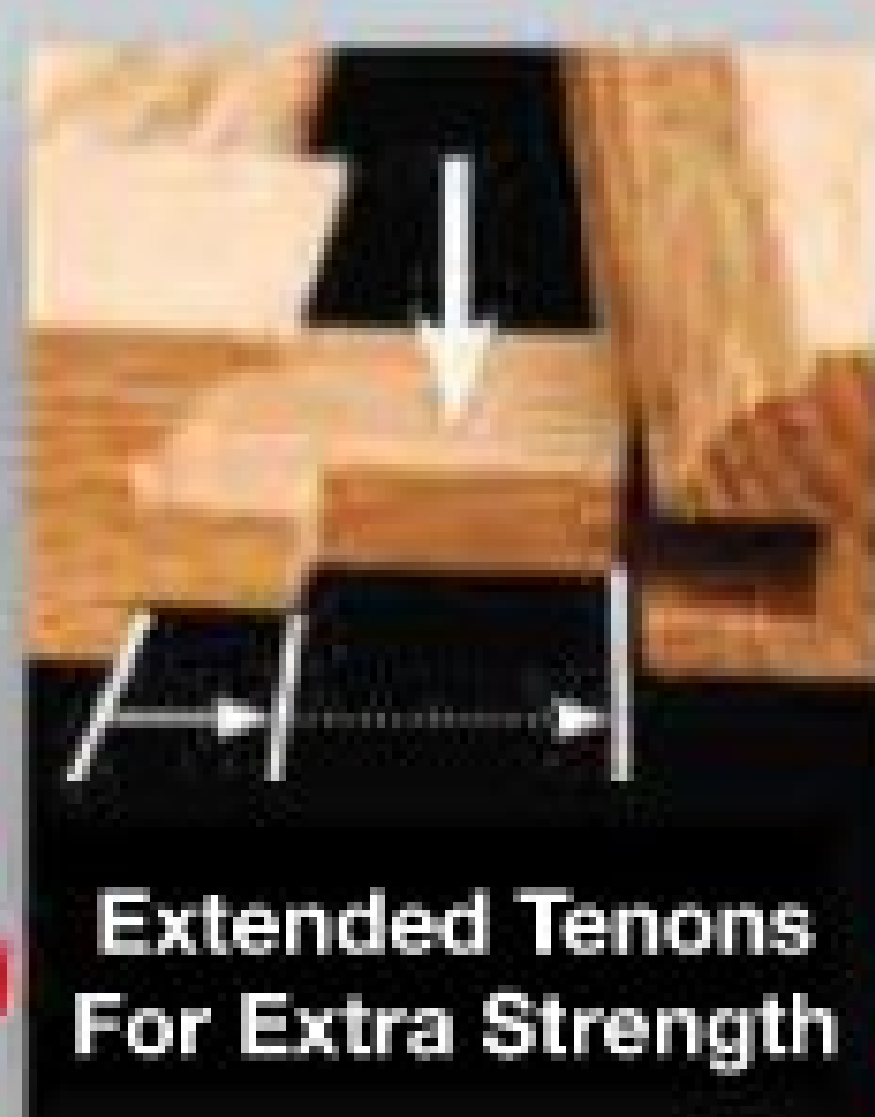
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