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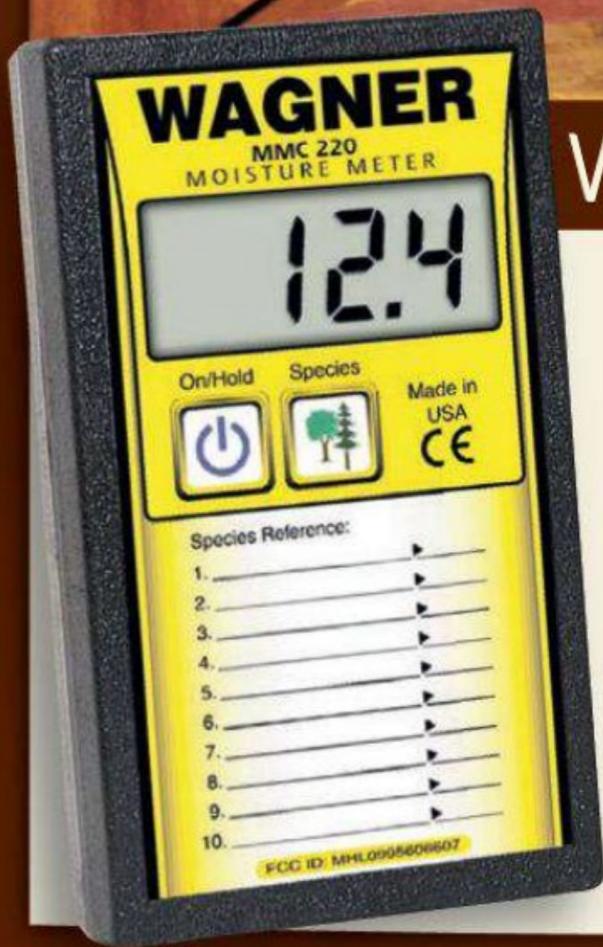
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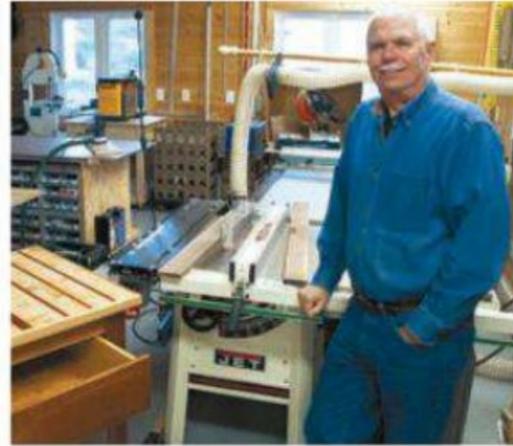
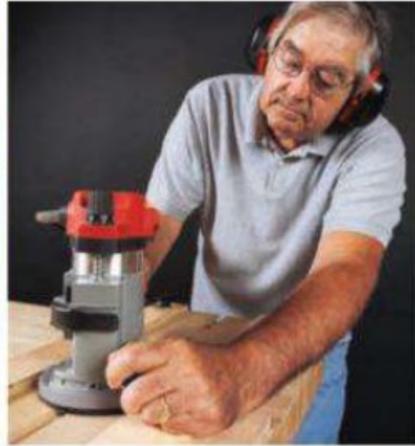
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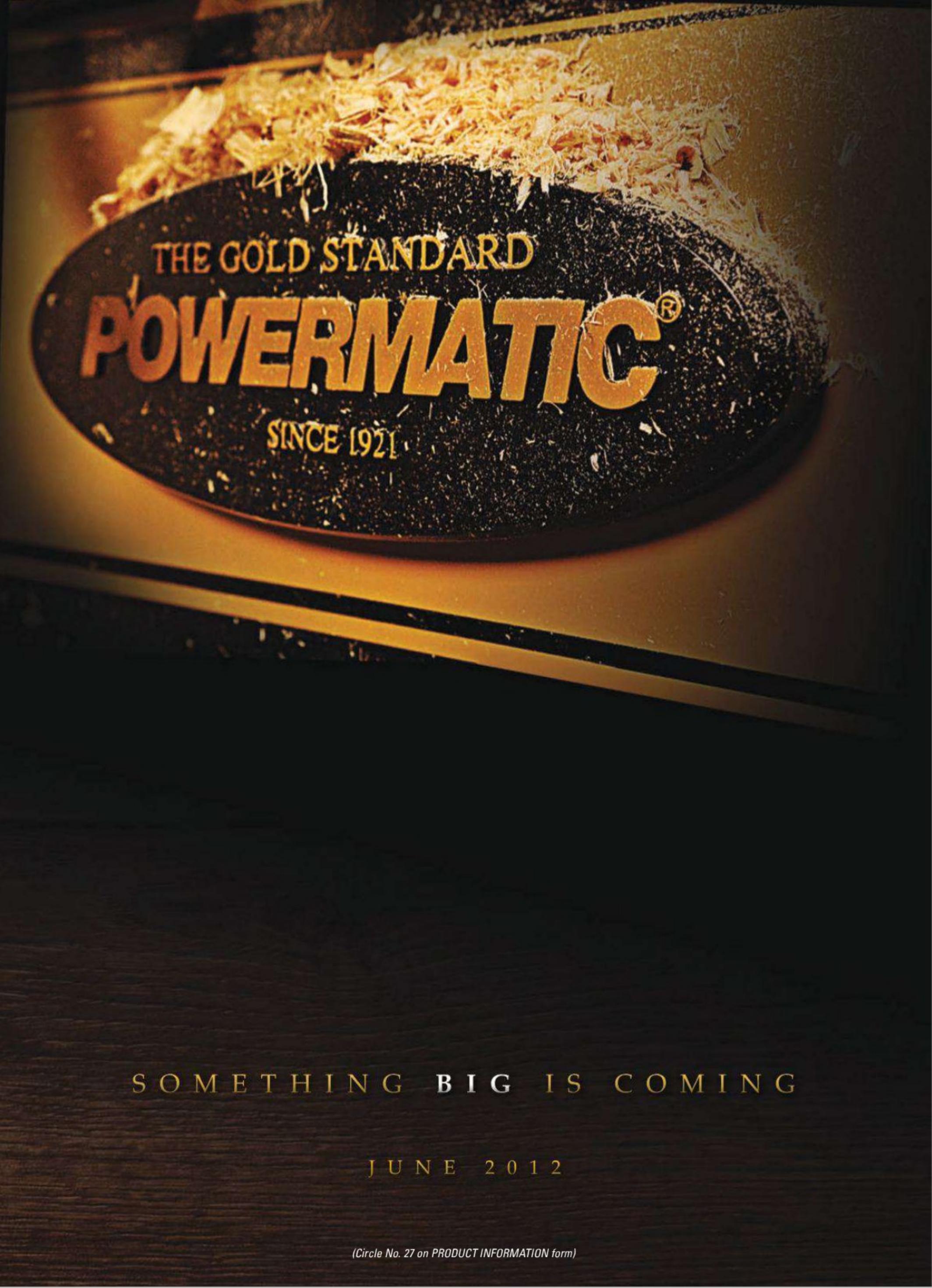
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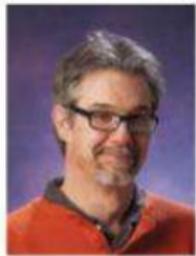
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# Letters

## Forbidden Fruit or . . .

### NATURAL TOOL EVOLUTION ...

Woodworking has been around ever since Eve needed a place to sit



down, and it will, presumably, stick around for as long as there are trees. But what will it look like?

Currently, my home shop looks a lot like my dad's cabinet shop of the 1980s, but not at all like a lot of small shops making cabinets today. I don't have a CNC router or a boom saw (although, like President Jimmy Carter, I must confess to having "lusted in my heart" over a small CNC router).

My tools may have more lasers than NASA did when they flew to the moon, and I have an iPad app that creates plywood cutting diagrams. So, what does all this mean? Is technology going to be the end of woodworking as we know it? Or is it simply normal tool evolution — chisel, to hand plane to jointer? I'm guessing you have an opinion ... and I'd like to hear it.

—Rob Johnstone

### Our Surveys Say ...

I read the information about your survey [Reader's Survey, February 2012] with interest as I am one of the less than 4% of woodworkers who don't own a table saw.

This dates back to early in my career when a coworker, in his home woodshop,

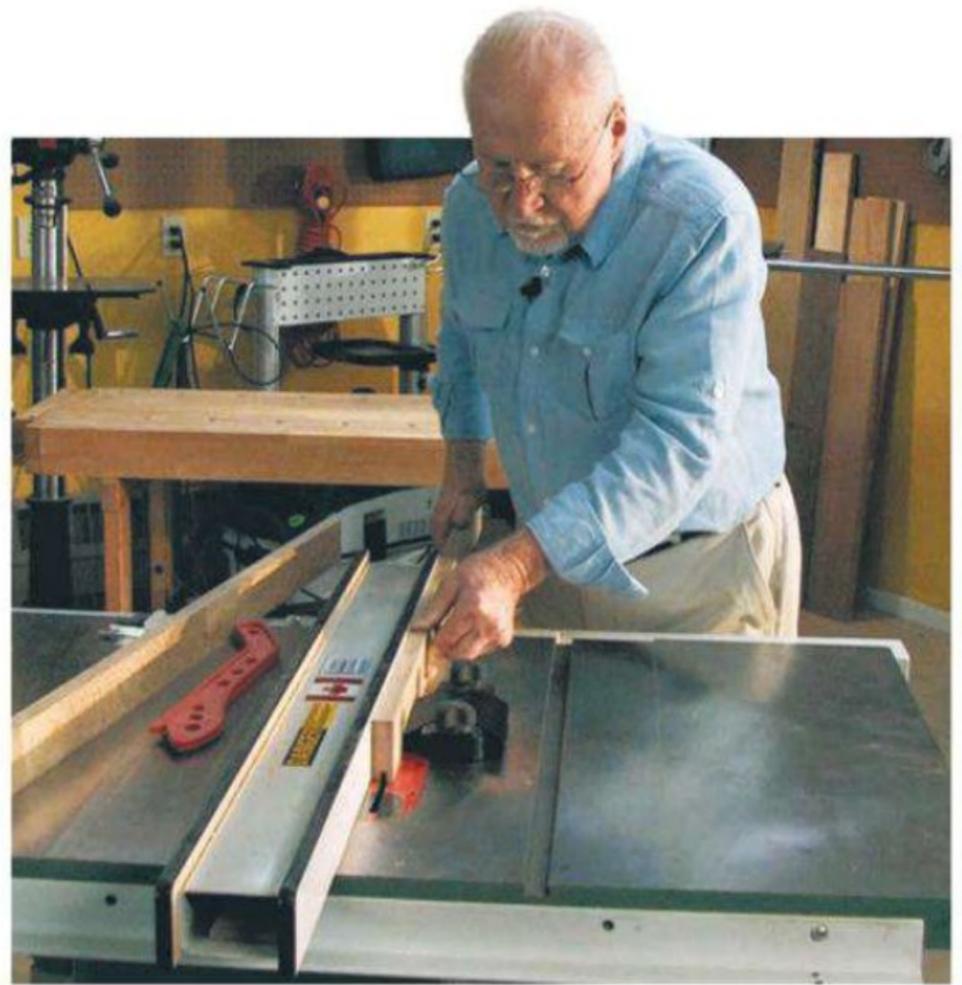
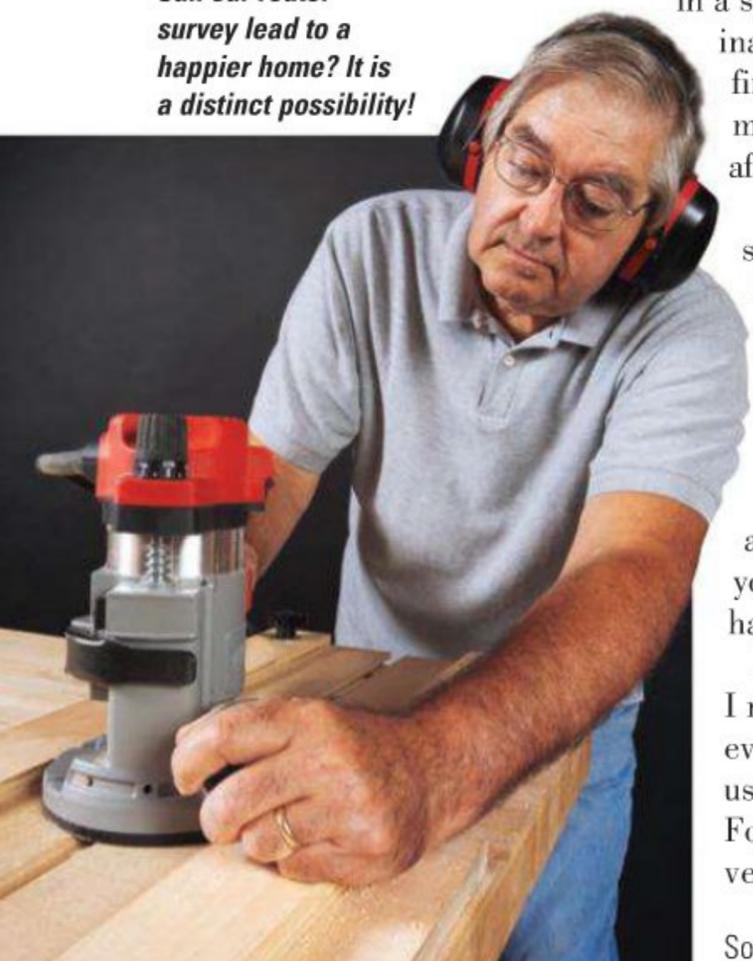
in a split second of inattention, lost two fingers. That shocked me, and I became afraid of table saws.

When I retired and started woodworking, I made the decision not to have a table saw because for me it would not be safe. Had the SawStop® been available in my younger days, I may have purchased it.

I was appalled when I read that one out of every four was injured using the table saw. For me, safety is very real.

David Scott  
South Windsor, Connecticut

**Can our router survey lead to a happier home? It is a distinct possibility!**



**Is fear of injury a good reason to avoid owning a table saw? For one of our readers, it is. As Ian Kirby would tell you, safe technique is a must.**

I must admit that I own more than five routers [Reader's Survey, December 2011]: eight. I have chosen Bosch as my mainstay router, having three 2.25hp, variable speed, soft-start — all the same model because I wanted to interchange bases and I have made add-on features for various bases.

Two observations: 23% own Craftsman Routers. Craftsman has been a quality router, my impression is, for many among the older generation. Does age of the woodworker determine what they own?

Also, I personally do not buy routers having more than 2.25hp. [In the survey], 20% own 3hp or greater. When using a 15-20 amp breaker, 2.25hp is the max for the 15-20 amp. You don't gain additional power by using a 3hp router: the breaker limits the draw.

My wife is reading the article now; hopefully she will understand why I own eight routers. I feel a wife who supports your hobby is a tremendous asset.

Dennis L. Weaver  
Goshen, Indiana

### Stops for MDF Splitting

I just received my first issue of the magazine and enjoyed reading it. I was surprised at the advice given to Mr. Duermeier about the problem he was having with his project [Questions & Answers, February]. There are special screws called Hi-Lo screws and Confirmat screws that are designed for MDF and particleboard. Looking forward to the next issue ... thanks!

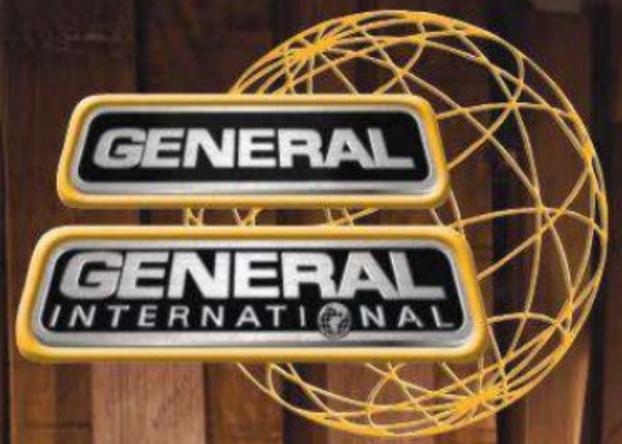
Ray Levesque  
Mims, Florida

In reference to splits in MDF when running screws into it: If this happens, the trick I use is to clamp the MDF back into position and give it a liberal



Letters continues on page 8 ...

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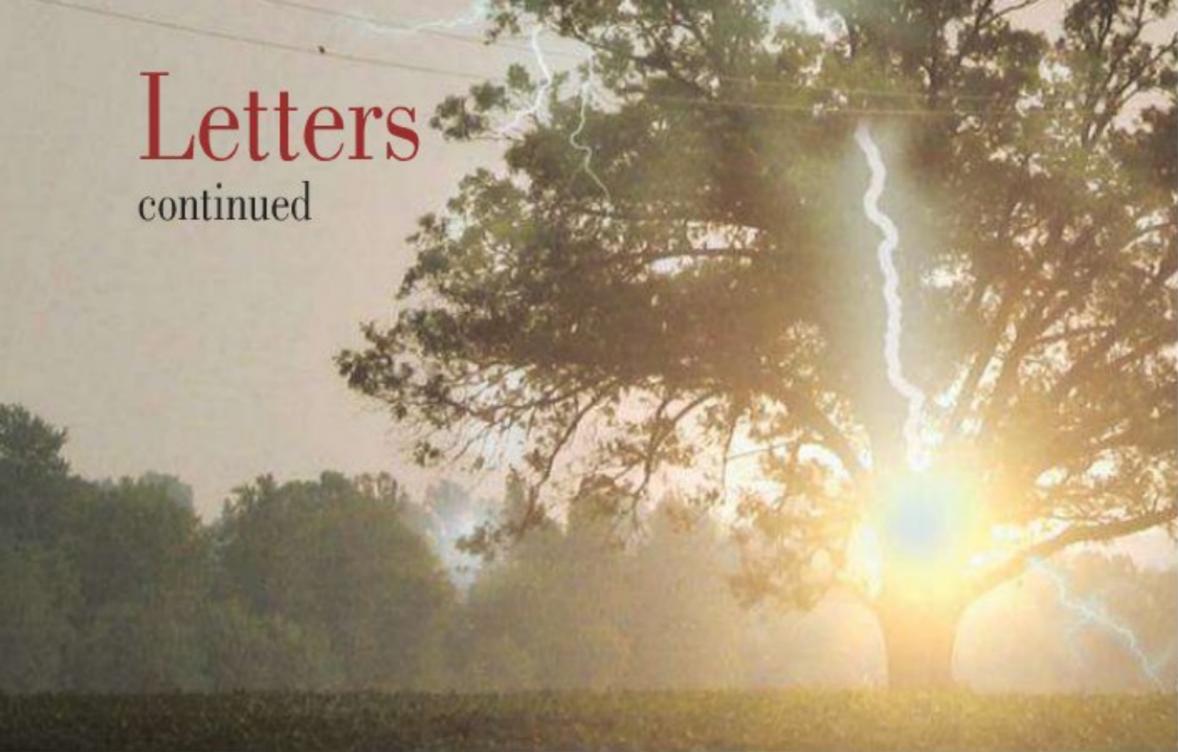
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# Letters

continued



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**Lightning-struck wood is very likely to be unusable for a woodworking project — our warning was appreciated by the original questioner.**

shot of cyanoacrylate glue. It will fizz and smoke, but then be as good as new. You'll still need to pre-drill before the screw is replaced.

Doug Glaspell  
Montrose, Colorado

## "Struck" by Lightning

I would like to thank you for sending me a prize — just for asking a question. My prize, the Osborne Miter Gage, is the best miter gauge that I've ever used.

Please thank the folks that spent time researching the problem I had with my lightning-struck wood. I've had some turners in my woodworking association comment on the article in *Woodworker's Journal*, saying that they will avoid lightning-struck wood in the future.

Phil Rasmussen,  
Hendersonville, North Carolina

## Beautiful Board!

This ["Cribbage Board," *December 2011*] is the first wood project that I have ever built from a magazine, and it

was fun! My sister will love the gift (she'd better!), and I will make a matching one for me. I saw the Watco Danish oil at my hardware store, and it looks amazing on my project! The finish couldn't have been easier to apply. I repurposed some 40-year-old mahogany scrap from a level-making factory for the base and used some wonderfully figured wood for the top. Just as the guys changed the SketchUp contest winner's plan, I changed it to suit my wood on hand. I also thought the square end looked better without the bevel. Thanks for the inspiration, *Woodworker's Journal!*

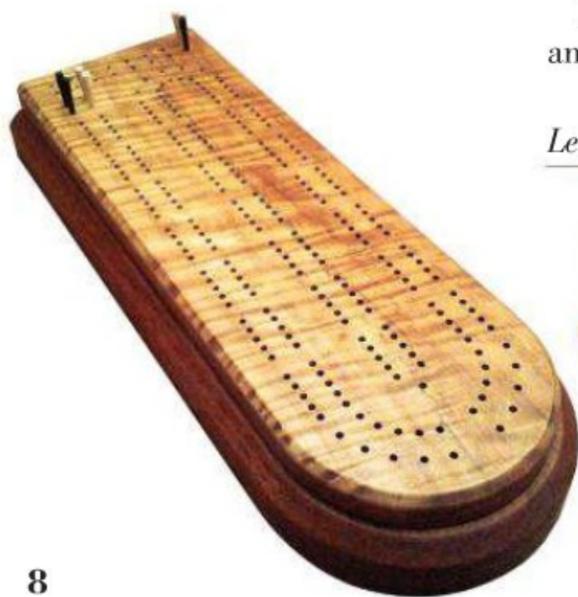
Dale Rosenquist  
Eastpointe, Michigan

## Terribly Tiny Screws

First, let me say how much I enjoy reading your magazine as I have been a loyal subscriber for many of my 35 years of woodworking. I believe there is a minor typo in the *February 2012 Woodworker's Journal*.

In "Screws, Lightning and Splitting," Sandor notes,

*Letters continues on page 10 ...*



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JUNE 2012

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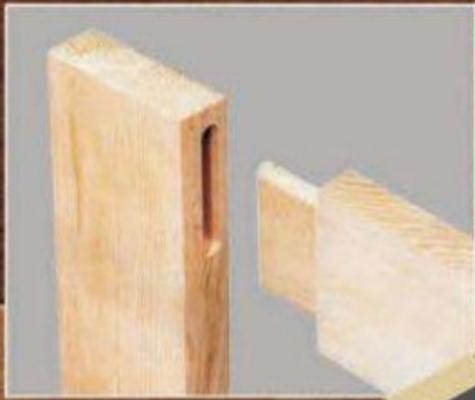
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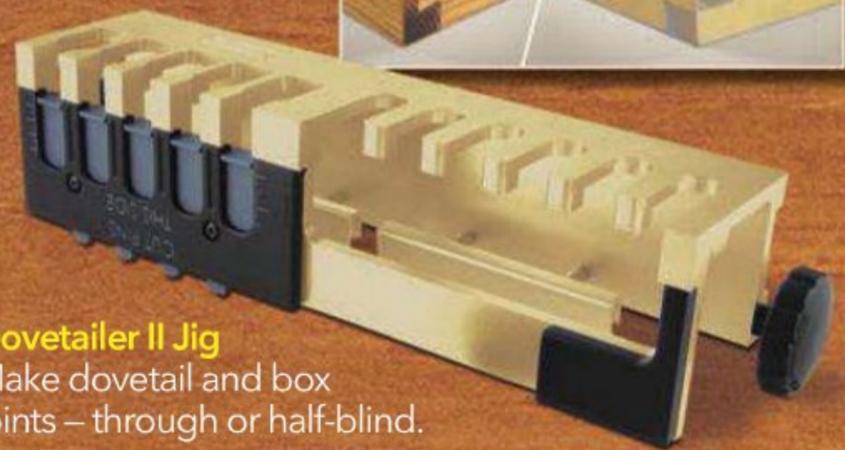


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Gary Wilson used our historic reproduction of the El Tovar chair as the design inspiration for his bench below.



"If 1/8" dia. is too small and the MDF splits, a 7/64"-dia. hole might prevent splitting." If I am not mistaken, I believe this should advise use of a 9/64"-dia. hole for the screw, since 1/8" is too tight and the 7/64"-dia. hole is actually smaller.

Harry Bogosian  
Bethlehem Connecticut

**WJ Responds:** Yes, indeed, it should be 9/64" — slightly larger than 1/8". Thanks to the math wizards that caught this typo.

— Sandor Nagyszalanczy

### Project Inspirations

When I saw the "Kitchen Step Stool" in the *October 2011* issue, I knew what to make my oldest daughter for

Christmas. She often drags a dining chair into her kitchen to reach the top shelves.



**One of our readers could not resist stepping up to this handy stool with a built-in handle!**

My version is walnut and sassafras, with a wipe-on polyurethane finish. I was not sure I would finish it before Christmas. This project was rewarding, but I would encourage anyone planning to make it to heed the advice in the article — make sure the cuts are precise, to avoid a lot of scraping and sanding after glue-up!

Lee Reep  
Fort Collins, Colorado

A friend asked if I would make a "bench" for her. I said yes first and then asked for some details. She presented a picture of a 46" Gustav Stickley settee but wanted it longer. Being unable to find plans similar to what she wanted, I happened across the plans for the "Grand Canyon El Tovar Hotel Chair," featured in the December 2008 issue of *Woodworker's Journal*. After a little studying, I decided I could build a settee by stretching those plans. I am attaching a picture of the finished product that stretched to 68".

Gary Wilson  
Fleming, Ohio

I am a retired educator. While I was working, I had a great woodshop, but when I retired I had to give up the big shop and settle for a two-car garage, so my woodworking took a back seat — until now. My wife has been on my case because I purchased a Leigh dovetail jig about 10 years ago and never used it. Well, I picked up an old *Woodworker's Journal* (March/April 1995) and found a nice little jewelry box using dovetail joints. I just finished it for my daughter as a keepsake, and she loves it.



You never know what happens to your old woodworking mags. As soon as I get caught up from Christmas, I want to get a sub to your fine publication again. I am really looking forward to getting back to woodworking after almost four years.

Merlin Wittenberg  
Collegedale, Tennessee

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# Questions & Answers

## Questions about Saws and Sawing

### 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.

**Sandor Nagyszalanczy** is the author of *Woodshop Dust Control* and a contributing editor to *Woodworker's Journal*.

### Contact us

by writing to "Q&A,"

*Woodworker's Journal*,

4365 Willow Drive,

Medina, MN 55340,

by faxing us at (763) 478-8396

or by emailing us at:

[QandA@woodworkersjournal.com](mailto:QandA@woodworkersjournal.com)

Please include your home address, phone number and email address (if you have one) with your question.



**Q** Is there a truly effective way to remove sawdust from the air as it comes from a large sliding miter saw? I believe that I have tried everything, and nothing seems to work. I have a 12" Bosch sliding miter saw (model 5412L). It's a wonderful saw, but it throws fine sawdust over a broad area no matter what I try. I have found that the least harmful (dusty) method is to have the saw positioned with its back to the wall.

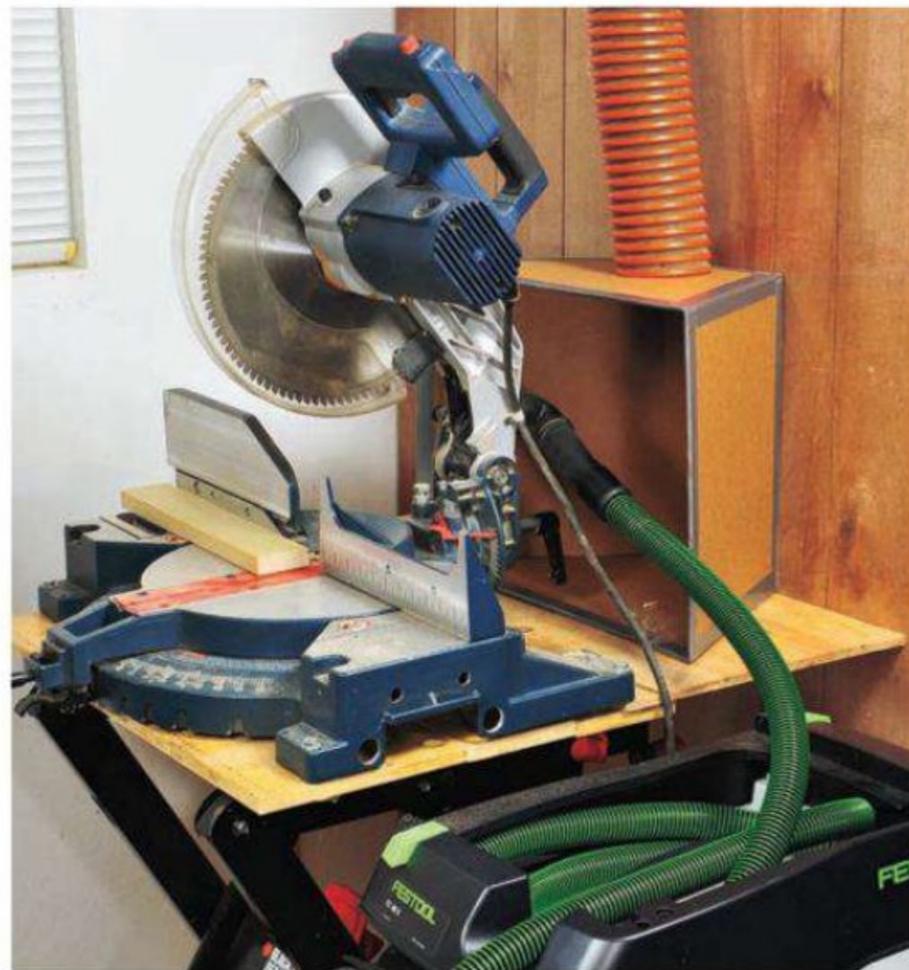
That little bag that came with the saw is nearly worthless. I have connected a Dust Right™ 4" hose to it, which is connected to a dust collector. That worked, but it only removed a minor part of the sawdust from the air. I have attached a tabletop dust fitting for miter saws. That, too, was connected to a dust collector. That took away quite a bit of sawdust, but only half or less.

In short, my miter saw is the messiest machine in my woodworking shop, simply because I cannot corral the dust and keep it from the air as I can with the other machines. I am stumped. Any ideas?

Paul Fletcher  
Indianapolis, Indiana

**A** It's true that powered miter saws (regular miter, compound miter or sliding-compound miter) are awfully good at flinging dust around the shop. But, in my experience, they aren't impossible to tame. You mention that you attached a 4"-dia. hose to your saw's dust port (where the bag normally

**Tool-activated shop vacuums are useful additions to a dust control strategy.**



**Controlling dust spewed from a miter saw is no small task — but it can be done, as demonstrated by our contributing editor. To find out what readers think about dust control, check out our Survey on page 30.**

attaches) and connected that to a dust collector. Your instinct was good, but there's a problem. The dust collector simply isn't moving air fast enough through that hose to capture the chips thrown out by the saw during cutting. I would remove the hose and connect a good shop vacuum to the saw's port. A shop vacuum moves air at a much higher velocity than a typical small-shop collector and, as such, is better suited to capturing fast-moving chips and sucking them away. Once that's done, reconnect your 4" hose to your tabletop dust hood fitting and hook it up to your collector. The hood should capture the finer dust that the vacuum misses. Together, the vacuum and collector should deliver the one-two punch necessary to catch the lion's share of your saw's

dust. To reduce the hassle of having to turn on both collector and vac before every cut, try using a shop vacuum that has a built-in auto switch: You plug the saw into the vac, and it turns on and off automatically in concert with the saw.

— Sandor Nagyszalanczy

**Q** I am working on a coffee table which has a top that is 24½" x 48". Currently, the boards for the top are cut longer than 48" and are ready to be edge glued into one large panel. A panel of this size is difficult to control on a table saw when cutting it to the correct dimensions, even when using outfeed tables, extended miter gauge, etc. My question or dilemma is what is the best approach: glue the panel up and then cut it to

*Continues on page 14 ...*



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# Questions & Answers continued



## Winner!

For simply sending in his question on cutting large panels, Paul Milot of Georgetown, Texas, wins an Osborne Miter Gage by Excalibur (from General International). Each issue we toss new questions into a hat and draw a winner.

dimension on the table saw or cut each member of the top to the final dimension and then glue it up (but this will require sanding to smooth the edges)? If I cut the top as one piece, the risk is that it may not be straight and ruin the top. If I cut each piece individually, how do I get the edges right with little tearout?

Paul Milot  
Georgetown, Texas

**A** As you rightly point out, larger panels can be unwieldy to cut on a table saw. Still, crosscutting those individual boards to final length and then gluing them together could make for a tricky glue-up. If the boards slide even slightly out of



position, you won't achieve those flush ends. Here's my suggestion: glue up the panel now, with the boards overly long. When it dries, install a plywood-cutting or fine-tooth blade in your handheld circular saw and use it to crosscut the panel to length. Run the edge of your saw's base against a straightedge clamped to the panel. Done carefully, you'll

get results on par with a table saw and have much better control over those important end cuts.

— Chris Marshall

**Q** I have a question for you folks ... I have a 3hp JET table saw, model JTAS-10, V-belt drive. My question is

*Continues on page 16 ...*

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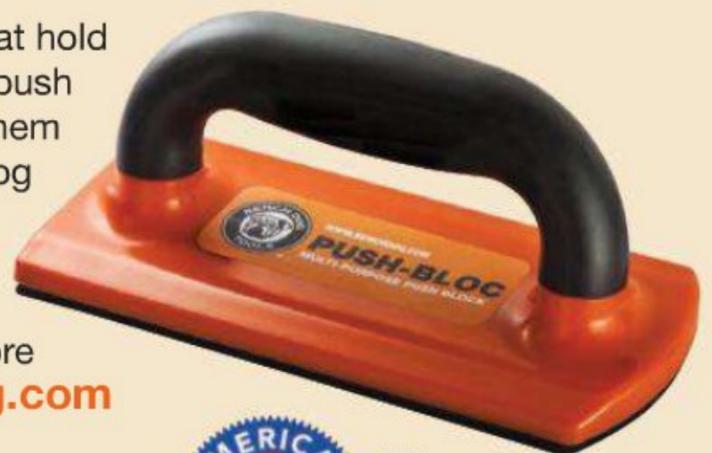


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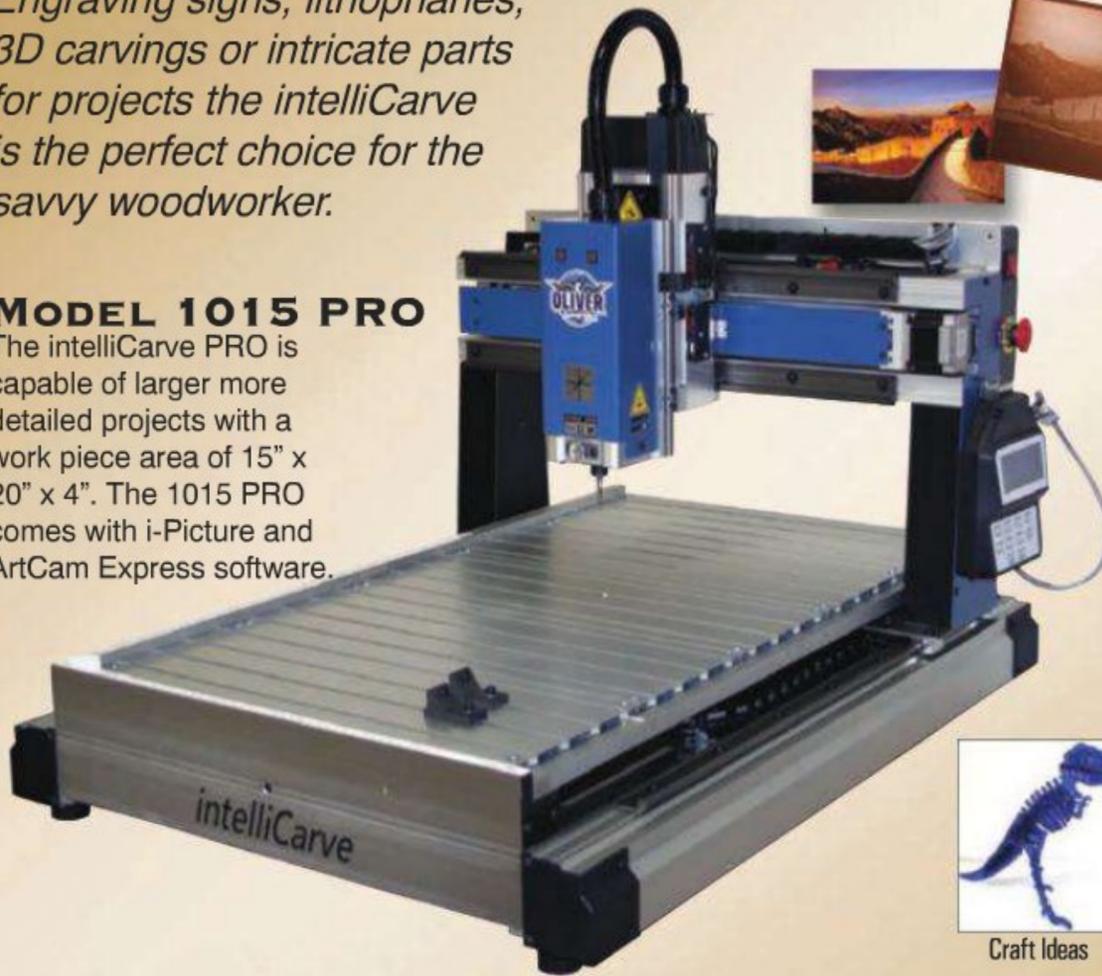
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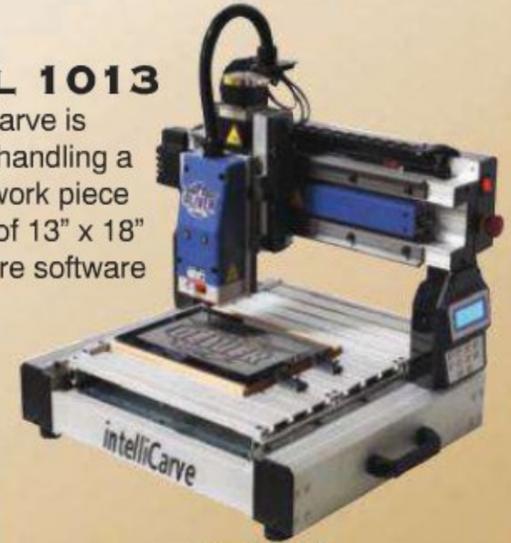
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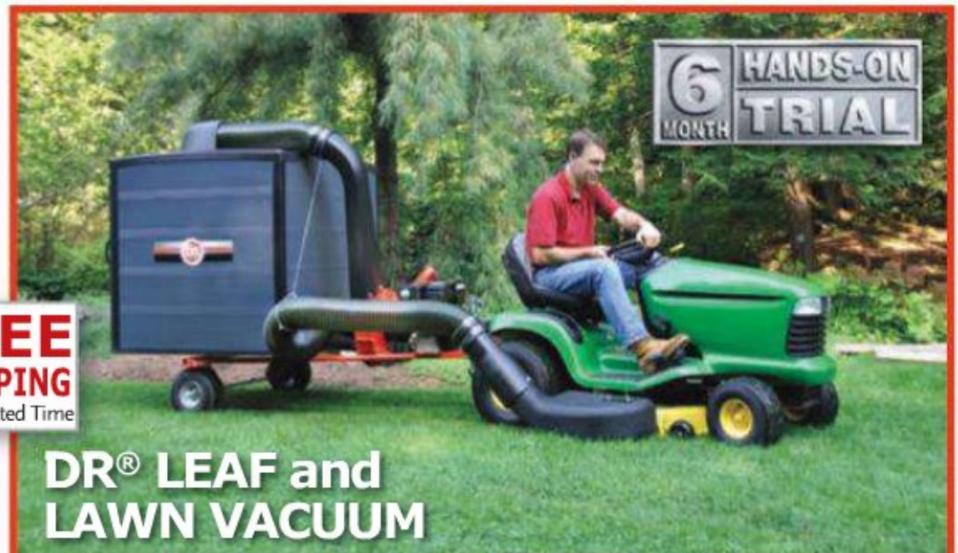


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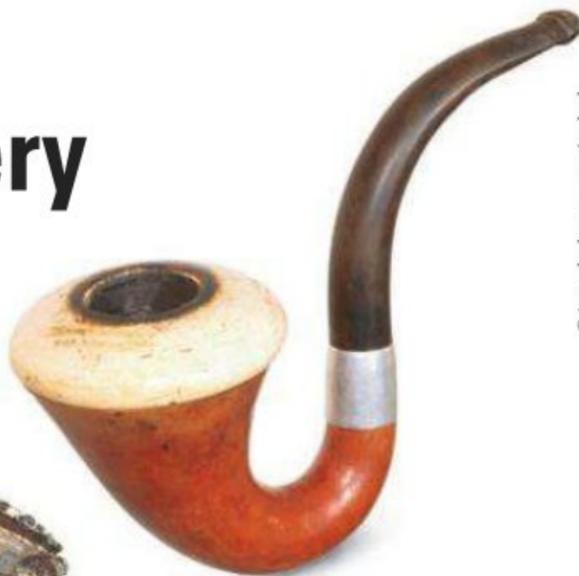


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# Stumpers

## Key to This Mystery

*No smoking ... gun ... solves this mystery tool.*



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Back in the February issue, **Paul Crow** of Lima, Ohio, asked us to solve the mystery of his tool. One of the speculations we received was that “it may be used to pick locks,” from **Mel Johansen** of Glendale, Arizona. Another thought? **Dean Santner** of Alameda, California, thinks “this gizmo” could be “a brutally efficient tinger for removing that unwelcome

**Steffner** of Las Vegas, Nevada. “To use it, one would just insert it into the bowl and twist,” said **Tony Roberto** of Cincinnati, Ohio. **Craig Covell** of Lawrenceville, Georgia, said the reamers “were usually sold in a leather or vinyl pouch for pocket storage.”

“This tool prolonged the life of the pipe and was much safer to use than a knife,” said **Richard Rose** of Floyds Knobs, Indiana.

Why else might you use it? According to **Bill Needham** of Morris, Illinois, “After you smoke a pipe a while, the wood of the bowl gets caked with ash, and sometimes flavored tobacco leaves a taste. This key-shaped tool can be set to the correct angle of the sidewall of the bowl, and after a few turns in the pipe, the bowl is cleaned out. A couple of swipes of a pipecleaner through the mouthpiece, and you are good to go again.”

**Ed Huck** of Franklinville, New Jersey, meanwhile, added that this applied to “briar” pipes: “Corncocks are not reamed, just thrown away and replaced.”

—Joanna Werch Takes

debris from your nose and ears after a particularly dusty day in the shop.”

Well, it’s for cleaning. As **George Quasny** of Pasadena, Maryland, said, it “is an adjustable pipe reamer.” “Not plumbing, but smoking” pipes, **Norm Jolivet** of Mersey Point, Nova Scotia, clarified. **J.M. Boswell** of Chambersburg, Pennsylvania, said, “They are used to trim the cake (carbon buildup) inside a smoking pipe.”

In this case, “The two pieces could be adjusted for the bowl diameter,” said **Jim**

**Winner!** **Craig Covell** of Lawrenceville, Georgia, wins a **PORTER-CABLE 18V Close Quarters Drill (PCC520B)**.

We toss all the Stumpers letters into a hat to select a winner.



## Questions & Answers continued



**Cleaning and lubricating your table saw is the first step in troubleshooting sticky gears.**

concerning the gears that lower/raise and tilt for bevel cuts. I have no problem raising the blade or tilting all the way to 45 degrees. Where I am starting to have difficulty is when I go to lower or especially tilt the blade back to 0. It’s really hard to turn the wheel. Is there a product that allows for “greasing-the-wheel” without real grease? Something that lubricates the rod without mucking it up so all the sawdust collects on it? I was thinking maybe silicone spray would work?

Chris Clark  
Fort Collins, Colorado

**A** There is a lubricant that many woodworkers swear by when it comes to lubricating gears in environments that are very dusty. It’s called Boeshield T-9; you can find it at Rockler or any number of retail stores (or find it at [boeshield.com](http://boeshield.com)). Lubricating a stubborn system like yours is a good way to start. But if it does not help, there may be some alignment or wear issues that are coming into play.

Speaking just for myself, I know that I don’t pay enough attention to regular machinery maintenance. But the good news is that the *Journal* has an online article regarding table saw upkeep that might just be the ticket in terms of troubleshooting and solving your problem. You’ll find that article at the website:

[www.tinyurl.com/wjshopmaint](http://www.tinyurl.com/wjshopmaint)  
— Rob Johnstone



What’s This?

Jerry Grzenda of Livonia, New York, found this 6"-long brass tool in a box of other tools at an auction.

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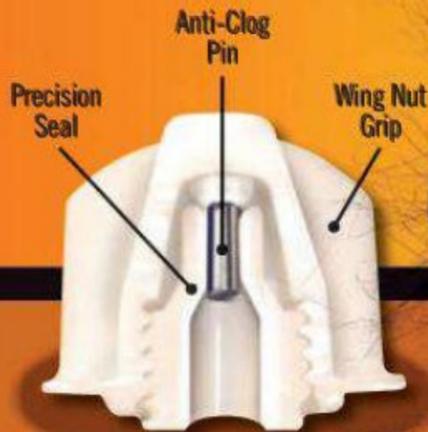
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# Tricks of the Trade

## Sticky Fixes Worth Remembering



### Safety First

To demonstrate techniques and show details, *Woodworker's Journal* sometimes removes necessary guards from power tools. We do not advocate this practice and urge readers to strictly follow tool manufacturers' instructions and safety precautions.

### Twist Aligns Lathe Bed

My lathe always seemed to drill holes a bit off-center with a drill chuck installed in the tailstock. I evaluated the problem by fitting cone centers in both the headstock and tailstock. The points didn't line up, as I expected. Then, I gradually adjusted the lathe's feet by extending them to twist the bed ever so slightly until the points met. It was spot-on in just a few turns. Adjust opposite corners to twist both bed ends evenly.

Michael Cyr  
Westport, Massachusetts

### Clearing Spray Nozzles

Instead of turning my cans of spray finish and paint upside down and spraying the gas to clear the nozzle, I pull off the nozzles and drop them into a jar of mineral spirits and give it a few shakes. I leave the nozzles submerged in the solvent until I need them again. Then, I pour the spirits off into a second jar for re-use and drop the nozzles onto the lid to keep my fingers dry. My method saves the propellant, and the nozzles are ready to go whenever I need them again. I've been using several

of my spray cans for years and never had a clog this way.

Dennis Weber  
Glendale, California

### Tight-quarters Sander

Here's a quick tool for sanding inside corners and other unreachable areas: apply a piece of sticky-backed (PSA) sandpaper to the blade of a putty knife. The blade's edges sand flush into corners, and its thin profile fits into narrow spots. Just peel off the spent paper when you're done.

Bill Wells  
Olympia, Washington



**PICK  
OF THE  
TRICKS**



A screw forms a "handle" for easier wood plug removal.

### A Better Way to Pull the Plug

Removing the wood plug from inside a hole saw used to be such a pain for me, but I'm hoping my discovery can help a lot of other woodworkers and DIYers remove them effortlessly. Before boring your hole, mark its centerpoint and scribe the circle with a compass. Drive a screw through the waste area about halfway between the centerpoint and the hole's circumference. Choose a screw about an inch longer than the board's thickness. Now bore the hole as usual, unplug the drill and grab the screw with a pliers to pull out the plug. Simple.

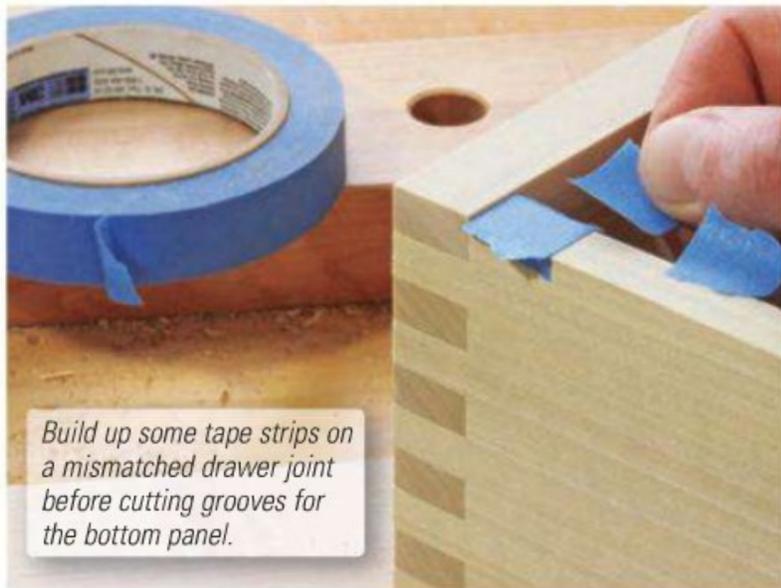
Glenn Willis Jr.  
Redondo Beach, California



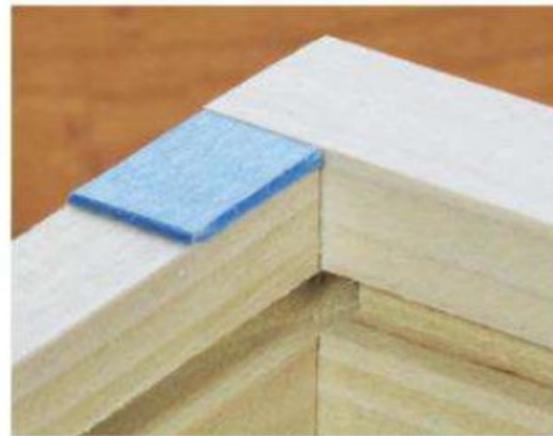
Lamello

Winner!

In addition to our standard payment (below), Glenn Willis Jr. of Redondo Beach, California, will receive a Lamello Vario Box 440 Piece Set of Biscuits and Joining Elements from Colonial Saw for being selected as the "Pick of the Tricks" winner. We pay from \$100 to \$200 for all tricks used. Send your original, unpublished tricks with a photo or drawing to Woodworker's Journal, Dept. T/T, P.O. Box 261, Medina, MN 55340. Or send us an email: [tricks@woodworkersjournal.com](mailto:tricks@woodworkersjournal.com)



Build up some tape strips on a mismatched drawer joint before cutting grooves for the bottom panel.



### Aligning Your Drawer Grooves

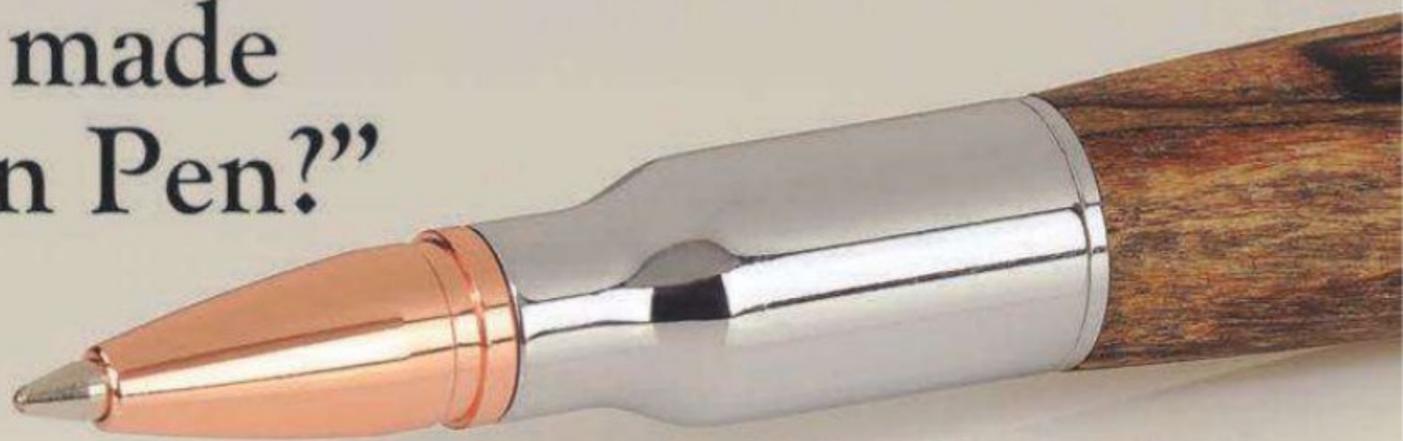
My box joint jig setup sometimes produces a tiny offset at the edge of a drawer joint, and that can lead to a misaligned drawer bottom groove if I don't fix it before making the grooves. Instead of sanding the edges flush, which I do later, I build up the "low" edge with layers of tape to shim it even with the other part before forming the groove. The tape "shim" slides along the saw fence and holds the piece in perfect alignment as I cut the groove.



The tape strips ride the table saw fence, perfectly lining up the groove with its mating piece, as shown at right, above.

John Pettus  
Westminster, California

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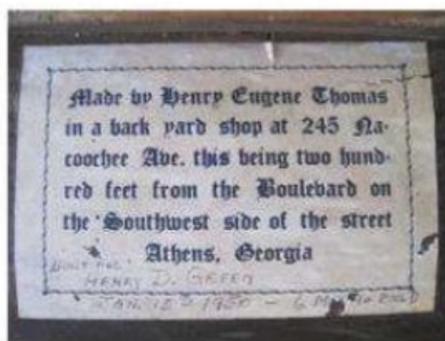
# Shop Talk

## Maker's Mark: Who Made What and When?

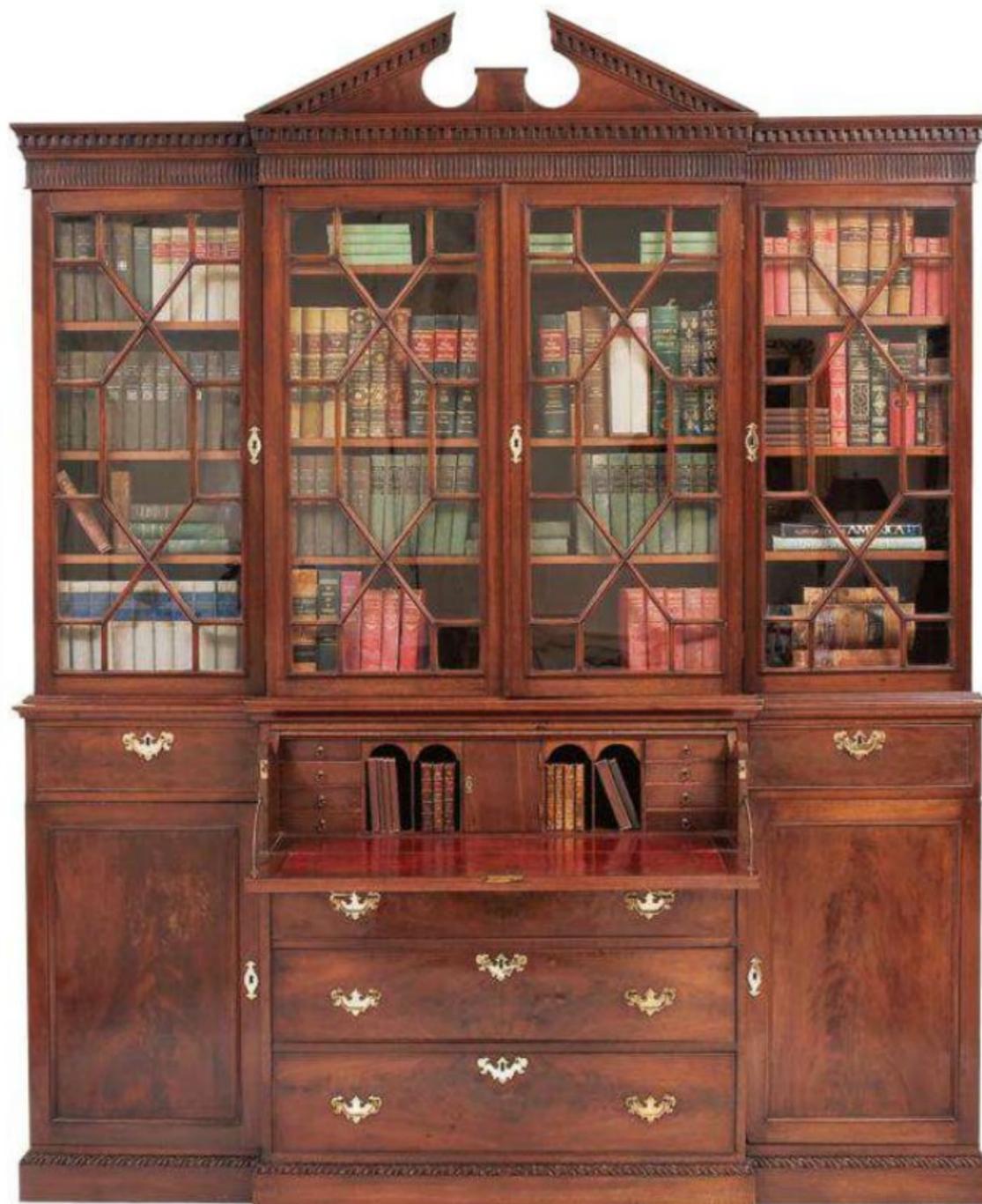


### Furniture maker

Gene Thomas (shown with his wife Ethel in 1920) influenced early collectors of Georgia furniture. He wanted people to know exactly where he made things: street numbers could change.



For more information on Thomas and his furniture, visit [www.facebook.com/georgiabellflowers](http://www.facebook.com/georgiabellflowers).



Georgia furniture historian Henry Green commissioned this breakfront from Gene Thomas in 1950. The center is an antique chest of drawers; the rest of the piece used wood from an antique wardrobe.

### Antiques or No? *Hybrid of Old and New*

Visitors to the Georgia Museum of Art this spring were surprised to discover that furniture which appeared neoclassical was made in the 20th century. Specifically, the pieces were made by Henry Eugene "Gene" Thomas, a Georgia woodworking icon from the 1920s through the 1950s.

Or, at least, some of them were: "In addition to being a maker, he was also a dealer; in the 1920s and '30s, he was out picking antiques," curator Ashley Callahan said. Thomas loved the old woods he found in those pieces, and

he hoarded some of the boards, using them for his own projects. He also made repairs to the antiques.

"Most everything he made

was a combination of old and new," Ashley said. "Most everything he found needed some repair, and when he made 'new' furniture, he



Influenced by designs found in rural Georgia furniture, Gene Thomas adopted a simple bellflower inlay as his "trademark."



**Built around 1940, this clock incorporates old (clock face) and new (finials) parts — and possibly as many as 20 species of woods.**

used old woods. It makes it really complicated.”

Over the course of the exhibition, furniture experts examined every piece for clues to its age. For example, “the bottom of a drawer might be 3/4 old wood and old finish — with one part shaved off to fit” a space. Some saw marks indicate antique tools, or there could be “shadows where other boards touched [wood] over the years,” Ashley said.

Thomas may have had a fluid view of reproduction and restoration, but “he certainly wasn’t the only person doing this,” Ashley said. “The same thing was happening across the country.”

Unfortunately, she noted, “A lot of history is lost within one generation” — especially with the antiques he found. “If he was the maker, people might think to say, ‘Gene Thomas made that,’ but with the antiques, they don’t necessarily think to tell their kids, ‘that’s something Gene Thomas found.’”

That’s a lesson for furniture owners everywhere, says Ashley Callahan. “I know that people should document their makers. Write down as much of the oral history as possible, and keep it with the furniture, and a copy with a local history museum if they have an interest.”

— Joanna Werch Takes

*Shop Talk continues on page 22 ...*

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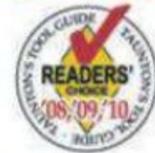
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*Reader Dennis West, like our editor Rob Johnstone, prefers his tools to be mobile. In fact, just about everything in his shop is on wheels.*

## Mobile Shop Casters Are Cool

A while back in our bi-weekly eZine email newsletter, WJ editor in chief Rob Johnstone was noting his penchant for mobility: specifically, his fondness for putting tools on casters. We heard from quite a few eZine readers who shared this affection, including Dennis Wert of Westlake, Ohio. Dennis (that's him in the photo



above) sent us these photos of his shop and noted, "I am also a big fan of casters. Everything in my shop is movable. This makes cleanup easier, and having the work tables all the same height

and on casters allows them to double as runout tables for my table saws."

If you'd like to be part of conversations like these, sign up for the free WJ eZine at [www.woodworkersjournal.com](http://www.woodworkersjournal.com).

## Satisfying that Burning Desire

### *Reader's Tips for Getting Started in the Art of Pyrography*

Pyrography, also known as woodburning, is the art of creating a design or picture by burning or scorching the surface with a flame or hot tool. My first piece was from cottonwood. Its white surface shows subtle differences in shading, and it doesn't have a pronounced grain to deflect the pen tip. Next, I tried oak. With its pronounced grain and its areas of light and shaded color, oak presents more of a challenge. Parts of the grain are more resistant than others to uniform shading from the hot tip. The prominent grain can make it difficult to burn in the design you want.

I did all this pyrography with a basic, solid-tip woodburning set plugged into a temperature control unit. My set came with several different tips designed to give different weight lines, to shade large areas or to produce a series of lines approximating fur.

The other category of equipment is wire-tip units, which come with a temperature control. The pens plug into a control box and the nichrome wire at the pen tip is the only part that gets hot.

Solid-tip sets, like mine, can plug directly into the wall socket. Their heating element is in the pen barrel; contact with the barrel heats the brass tip. You can get a rheostat or variable resistor to regulate the temperature of the solid-tip units.

— Ellis Hein 



*The author's first forays into pyrography include "Con Tiki" (above) and bears' fur (right).*

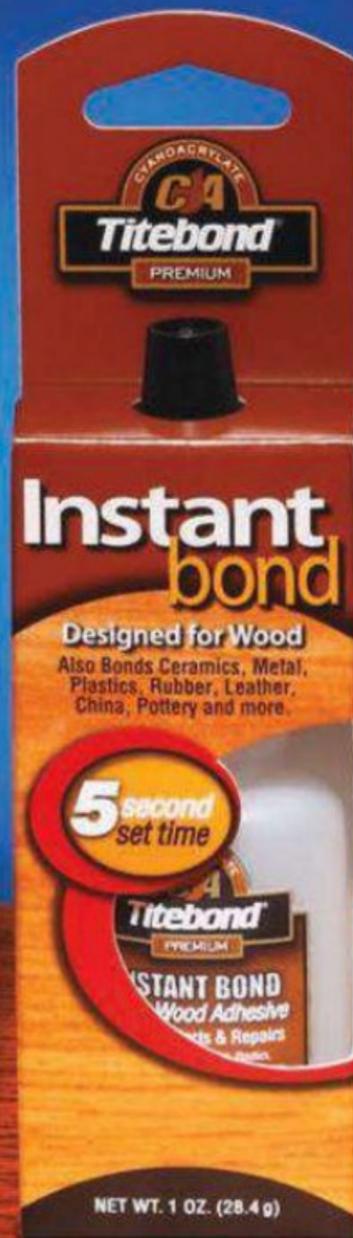


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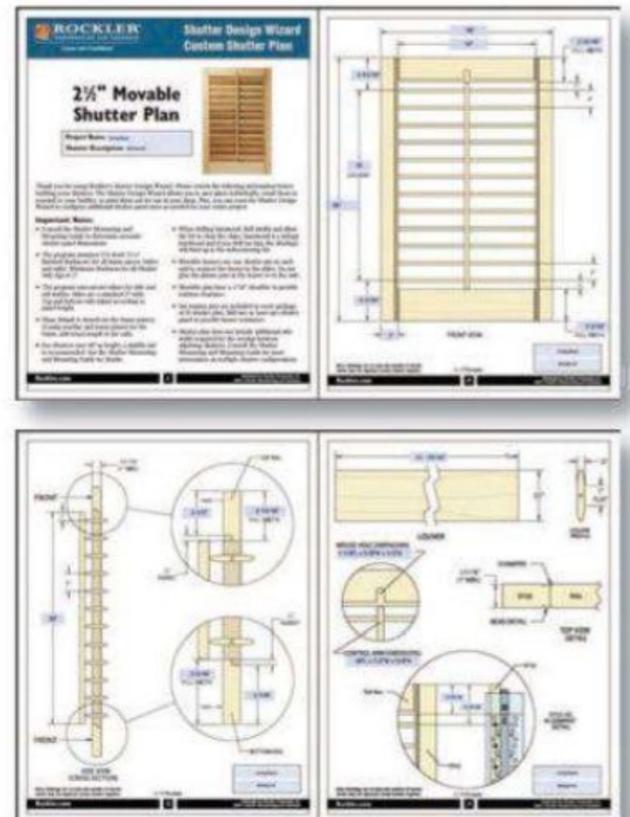


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# A Complete Shutter System

By Chris Marshall



**A few mouse clicks on Rockler's website creates a complete set of printable plans for your shutter project. The Shutter Design Wizard is quick, accurate and, best of all, free.**

## The Shutter Design Wizard

Here's a big reason to like this system: there's almost no desk time required for planning or drawing your shutter project, thanks to the free Shutter Design Wizard program Rockler offers on its website ([Rockler.com/shutter](http://Rockler.com/shutter)). Once you've decided between 1¼"-, 2½"- or 3½"-width louvers (the only three options), and whether you want the louver slats to be operable or fixed, a guide provides mounting considerations to help you figure out the final width and length you'll want your shutters to be. With a couple more mouse-clicks, you enter these two dimensions into the Design Wizard and hit "Submit." That's where the magic happens: instantly, you receive a full set of printable plans for your project that include drawings (although not to scale), a cutting list, a list of hardware with pricing and another list of optional router bits and jigs if you decide to build shutters completely from scratch. I chose this approach and built mine from cherry so I could try out Rockler's special louver-cutting and shutter beading router bits. The cutting list assumes dowel or loose tenon joints on the stile and rails, but, like me, you can adjust them for standard mortise-and-tenon joinery if you wish. The company offers premilled

*Build movable or fixed-louver window shutters in any size using an innovative online Design Wizard and Jig-It drilling jigs. Our field editor gave the system a try — and a big "thumbs-up."*

**W**hen Rob Johnstone called and told me to test a brand-new system for making window shutters, I had never built a shutter before. It made me the perfect "guinea pig" to give the system a whirl. About two days after receiving the box of templates, self-centering drill bits and hardware for

making the 2½" movable louver style shown here, my two shutters were done. It's that quick. If you've thought shutters would be a nice addition to your home but have shied away from the effort involved — or the expense of having them custom-made — this novel approach is good reason to add them to your project list this summer.

lengths of basswood louver slats and sells basswood rail and stile stock if you'd prefer to skip the louver routing process.

You'll also need to buy a template kit specific to the louver style you've chosen. It includes two jigs: a long one for drilling the stiles to accept plastic louver pins and metal clips that attach the louvers and control arms; and a shorter jig with adjustable stops that allows you to drill corresponding pin holes in the ends of the louvers. Three sizes of self-centering drill bits also come with the kit. Pick the one you want and align and clamp your shutter stiles together in the stile jig. The templates are clearly marked, sturdily made and make shutter construction essentially a drilling operation. (Note: for 1¼" fixed-louver shutters, the stile jig is a template for routing short slots that house the ends of the louvers instead of using the pins.) The jig kits sell for \$119.99 or \$49.99.

### Scratch-built Routing Option

I milled my cherry louvers from resawn stock, so I ordered Rockler's louver-profiling router bit and a special beading bit for detailing the edges and ends of my stiles and rails. I was impressed with how cleanly the louver cutter shaped the cherry; I expected some tearout and burning, but the bit produced no defects. These bits enable you to make shutters from any wood species you like, to match trimwork and flooring — a nice advantage.

### Final Thoughts

Rockler suggests drilling at a slow speed to help clear the chips, and it's good advice. The bits did clog now and then. During assembly, installing a series of tiny metal clips to attach a control arm to each louver required patience, but the clips hold securely once pressed into their tiny holes. All in all, it proved to be a quick, fun project. The custom plans coupled with simple jigs deliver great results. I wouldn't hesitate to build more sets of shutters for my home — this new approach makes it easy. Learn more by watching short videos at [Rockler.com](http://Rockler.com).

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



**An optional louver-shaping router bit can mill louver blanks from any wood species at the router table. Our author was pleased with its performance. Premilled basswood louver blanks and rail and stile stock are also available if you'd prefer not to build shutters completely from scratch.**



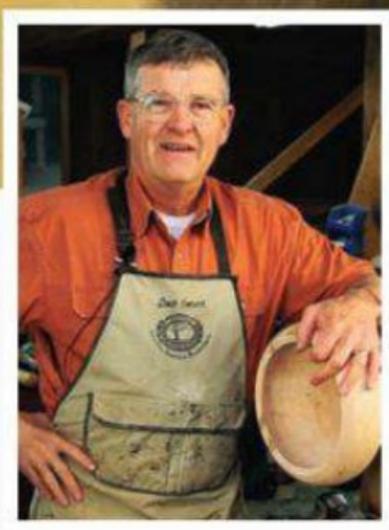
**Louvers mount on the shutter stiles with plastic pins. Two sturdy jigs that come with the kit enable accurate hole drilling in the stiles and louvers with three sizes of self-centering bits.**



**Movable louvers, as shown here, swivel on single pairs of pins inside the shutter frame. A wood control arm and metal clips (not shown) move them all in unison. Fixed-louver options either use two pins per end or are housed in routed mortises instead. The author found that a long strip of tape was convenient for holding the louvers in position during dry-fit and assembly.**

# Woodturning

## Turning a Carver's Mallet and a Wooden Assembly Hammer



*Last time out, Ernie taught you how to carve bowls for added detail. Here he shows you how to turn tools that can help you with that effort.*

Counterpoint to the Carved Bowls project I outlined for the last issue, I thought some spindle turning was in order. Namely, two useful shop tools: a carver's mallet and a wooden assembly hammer.

Additionally, the carver's mallet is necessary for driving the gouge if you haven't gotten around to carving a bowl yet. This is a nice beginning spindle exercise that I throw at aspiring turners. While the carver's mallet is straight spindle turning, the assembly hammer includes some unique lathe drilling techniques that are not easily accomplished on a drill press.

Adding to the fun factor of these projects is that the mallet and the head of the hammer can be turned from green

wood. It can be a freshly fallen tree or even a piece of firewood — seasoned or unseasoned. If you use an 18" billet of firewood, use the middle section and discard the ends. Turning green wood or even seasoned firewood (which is 15% water content) is really fun! With sharp tools, it's like turning on steroids with long flowing chips flying from your tools.

The carver's mallet needs to start with a 3" to 5" cylinder between 10" and 12" long depending on the starting diameter. Once you have a suitable billet, find as near the center of each end as possible and turn it cylindrical with a sharp spindle roughing-out gouge. I prefer to orient the head of the mallet to the headstock end of the lathe.

Face both ends dead square with a spindle gouge. It is very important that the head have a dead square end so it can strike close to an edge.

Mark the head section and narrow down the handle area with the spindle roughing-out gouge. It is important to stay on the bevel at the juncture between the head and handle or the gouge will ride up onto the head section, requiring a change of design. This means that you'll hold the spindle roughing-out gouge angled to the right if you follow my chucking scheme.

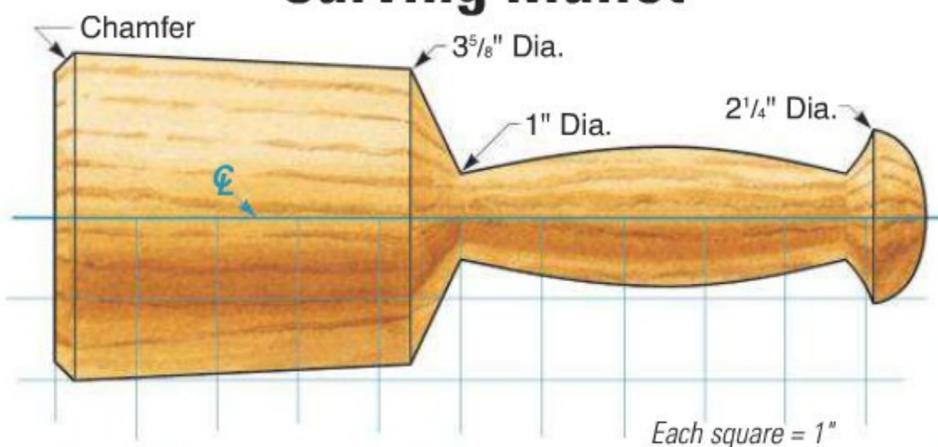
The head needs a bit of back taper to make a serviceable mallet. Tapering makes the surface of the cone that forms the head parallel to your workbench as you strike, allowing for better transfer of

energy to chisels and carving tools. I rough the taper with the roughing-out gouge and finish it with a skew; however, nearly as good a finish may be obtained by angling the gouge to the work and walking it down the conical surface.

The slope between the head and handle will be quite gentle as left by the roughing gouge. I employ a spindle gouge to steepen this angle to approximately a 15° angle, segueing to a radius as it meets the handle itself. The handle is really two gentle coves with a bead between them. This is all

seamless but leaves you with an ergonomic handle. The swelling fits your palm and gives great control. I finish 90% of this area with a skew, negating the need for sanding. The butt of the handle is a sharp cove ending in a half-round bead. This ensures the mallet won't fly from your hand regardless of the intensity of your pounding. This is simple turning, but the variation in diameters is challenging. Wander off the bevel and gouges will climb up to the greatest diameter with harsh consequences.

## Carving Mallet



Start with a 3"- to 5"-diameter by 10"- to 12"-long cylinder of green wood to turn a carver's mallet. Turning green wood is fun, because shaping happens fast with long streaming chips flowing off your tools.



A finish nearly as good as a skew may be obtained by angling a spindle roughing-out gouge, with a long grind, to the work. The tool's handle should remain at the same angle to the tool-rest throughout the cut.

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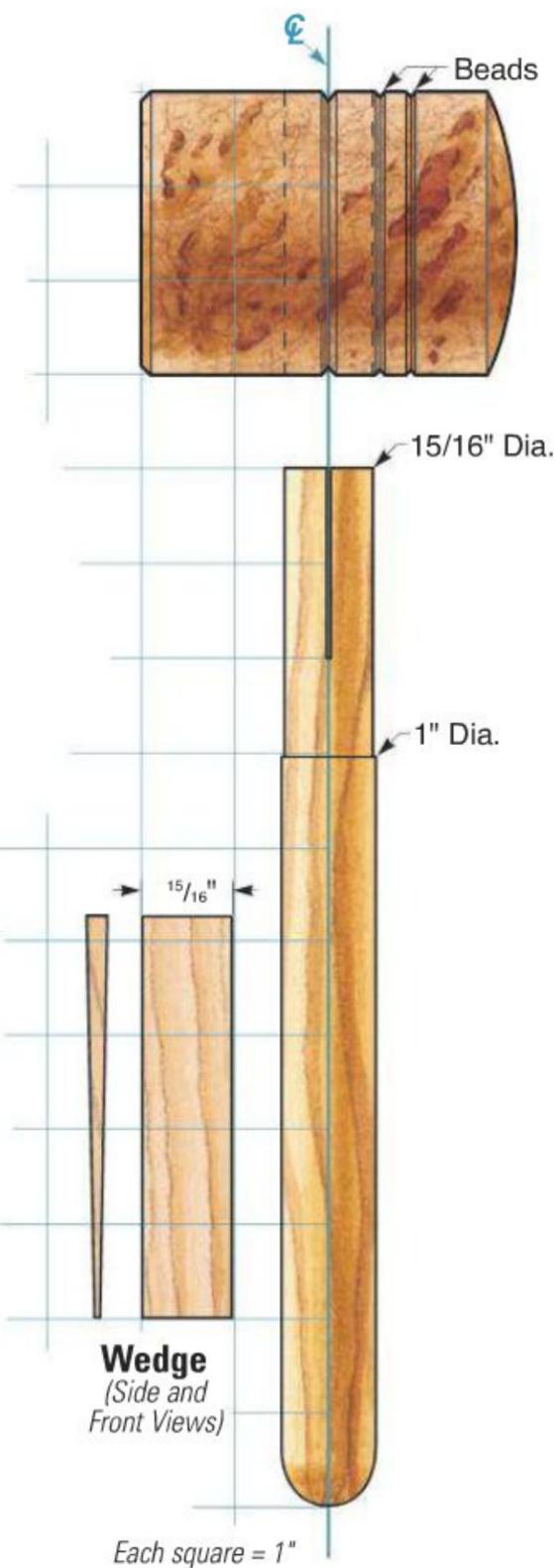
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## Assembly Hammer



**Wedge**  
(Side and Front Views)

Each square = 1"

### Assembly Hammer

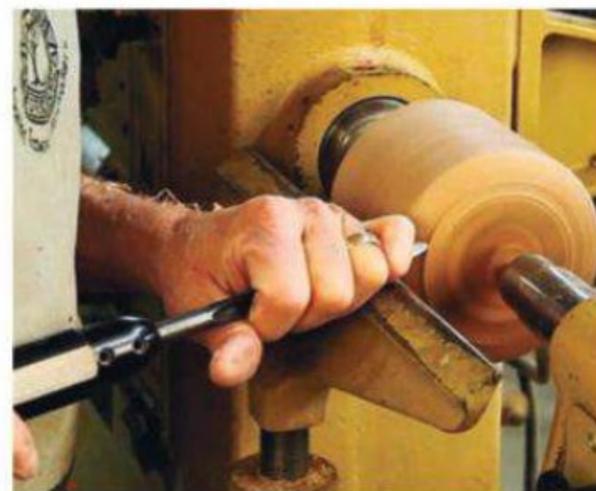
The assembly hammer ratchets up your skills with some interesting drilling techniques. The head can be turned from green or dry wood, depending on what you have available. Start with a billet that will yield 4" to 5" diameter by 4" to 4½" long (depending on the diameter). Turn it round with a spindle roughing-out gouge and face the ends dead square with a spindle gouge. Make a finishing cut with a skew, or use the roughing-out gouge technique I outlined on the carver's mallet. Find the center of the head with dividers and make a very small V-groove with the toe of your skew.

Now bring one face to a gentle convex shape with your spindle gouge. The other face should remain dead square, but put a heavy chamfer at the edge to ameliorate splitting. I now strike two grooves about 3/8" apart, equidistant between the center groove and the convex face. I turn a bead between the two grooves to quickly identify the convex face. (See *Drawings*, left.)

The next step is drilling a hole that passes through the center of the cylinder that forms the head, which is tricky on a drill press. A time-honored lathe accessory is a crotch-center that makes the task simple. While crotch-centers were a common listing in old Delta catalogs, you will have to find one used today, or make one as shown at right. It works with the cylinder nested in the V that runs flat through the crotch-center while you advance the tailstock wheel against a drill running in the headstock. The resulting hole has to pass through the center axis (see photo, center right).

I use a 1/16" drill because I have an open-end wrench of that size, and I use it as a sizing gauge when turning the tenon on the end of the handle. End the tenon with a slight shoulder, leaving the rest of the handle a bit fatter.

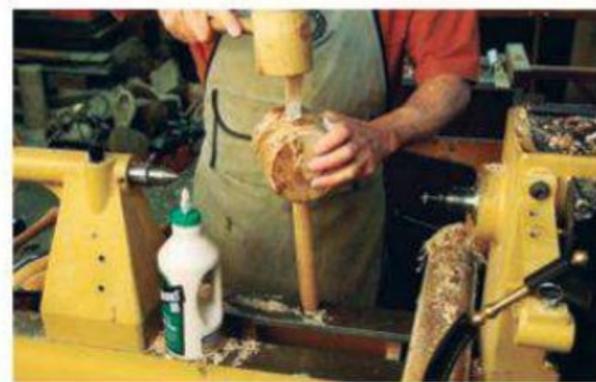
In preparation for assembly, cut a slot about two-thirds down the length of the tenon. Cut a 15/16"-wide wedge that has a long gradual taper in the 3° to 5° range. Smear glue on the tenon, the wedge and the walls of the hole in the mallet head. Tap the handle home until it bottoms out on the shoulder with the slot aligned so that it is across the head and will apply pressure along the grain of the head. Trim the turning bosses and the wedge, and you now have a great assembly mallet. Finish with shellac, oil or varnish. If the head is from green wood it will dry better with some



Face one face dead square and crown the other to a convex face.



Using your lathe with a crotch center locating the mallet head makes the drill pass through the exact center of the cylinder.



Align the slot and wedge as shown and drive the wedge home. This way, it will place pressure along the grain and not across it.

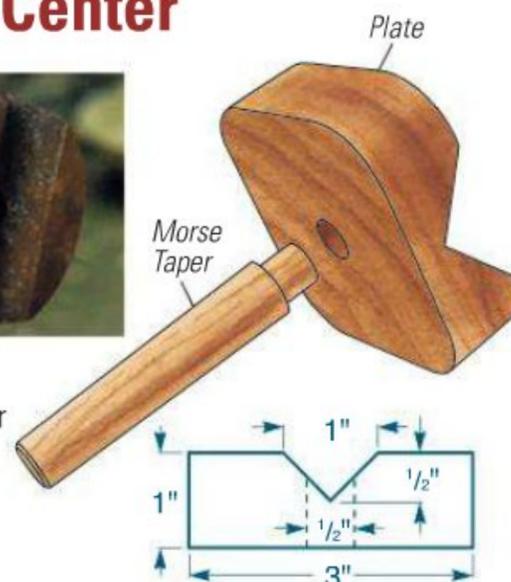
finish on the end grain, but if turned from dry wood, no finish at all is a good option. And always remember the woodturner's motto: Mallets towards none.

### MORE ON THE WEB

To watch a video of the author turning a hammer and a mallet, visit [woodworkersjournal.com](http://woodworkersjournal.com) and click on the "More on the Web" tab shown above.

## Make a Crotch-Center

To make a wooden crotch-center, turn a Morse taper 3/8" long; small end to 17/32" diameter and the big end at 45/64". Turn down a 1/2"-diameter tenon. Make the plate as shown at right. The author recommends cutting the V into a larger piece of wood and then cutting the plate down to size.





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# Reader's Survey

## What do You Think?

**C**ontrolling sawdust has been a challenge for woodworkers ever since wooden shoes were all the rage. But in recent years, technology has come to the rescue in terms of developing more and more sophisticated means to control wood dust — from the point where the dust is created, to dust extraction ports on tools to scrubbing the air in our shops. With all these options available, we thought we would find out how concerned our readers are about sawdust and what they're doing about it.

### HOW MANY WOODWORKERS ACTUALLY HAVE WOOD DUST ALLERGIES?

**12%** of woodworkers confirmed that they suffered from wood dust allergies.

### IS DUST CONTROL A BIG DEAL?

Woodworking editors and toolmakers seem to think that controlling dust is a must, but what about real woodworkers? The results are in, and

**92%** of woodworkers say that dust control is a big deal in their shop.

### IF SO ... HOW DO YOU CONTROL IT?

Of those who agree it's a "big deal," **79%** say they own some sort of dust controlling machine.

### WHAT KIND OF MACHINE?

The go-to machine is the steady-Eddie shop vacuum — with **37%** of woodworkers saying they own one.

Curiously, nearly as many woodworkers own stationary dust collection systems (**11%**) as those who own single-stage portable dust collectors (**12.5%**).

### Does sawdust make you sick?

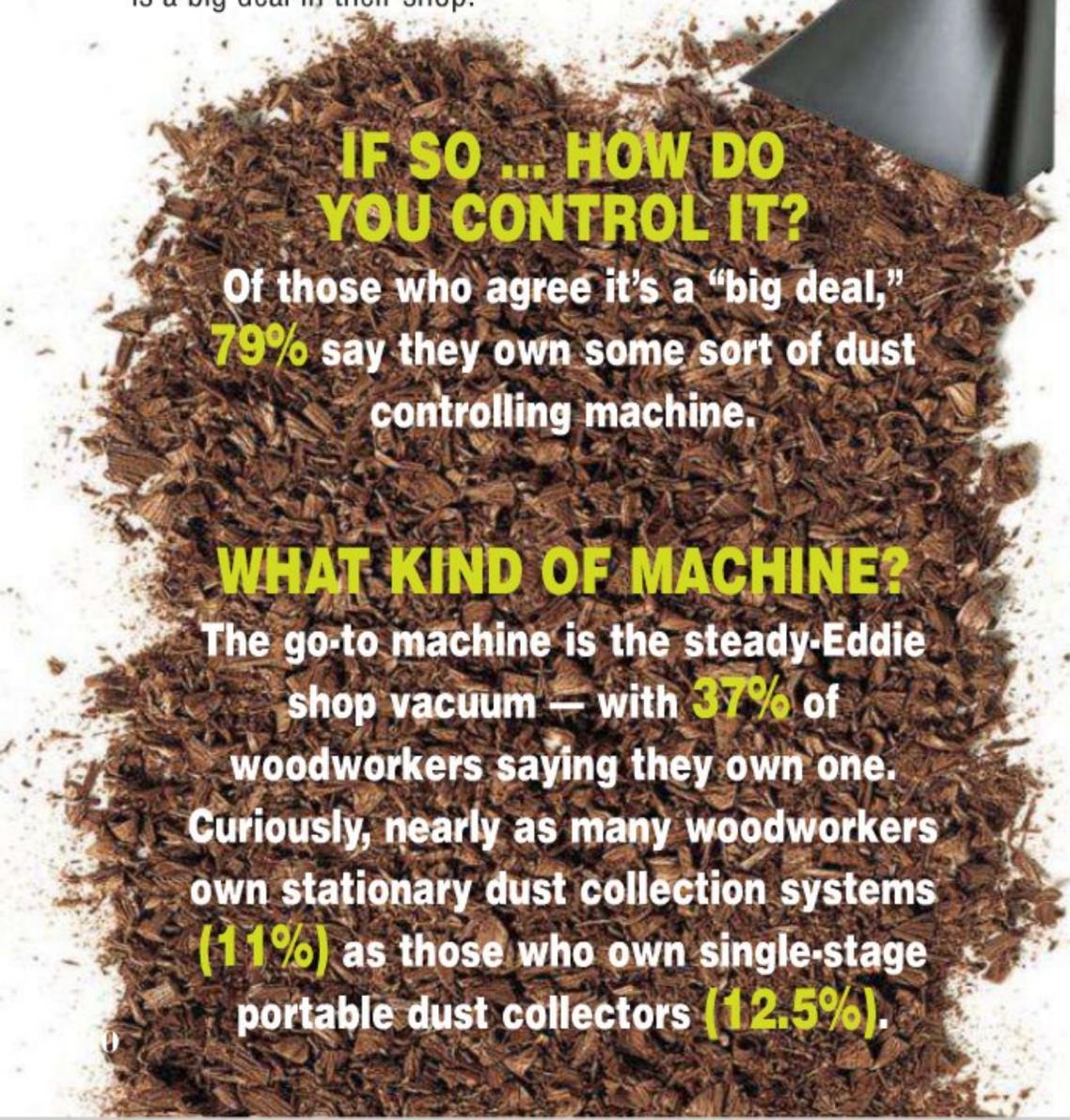
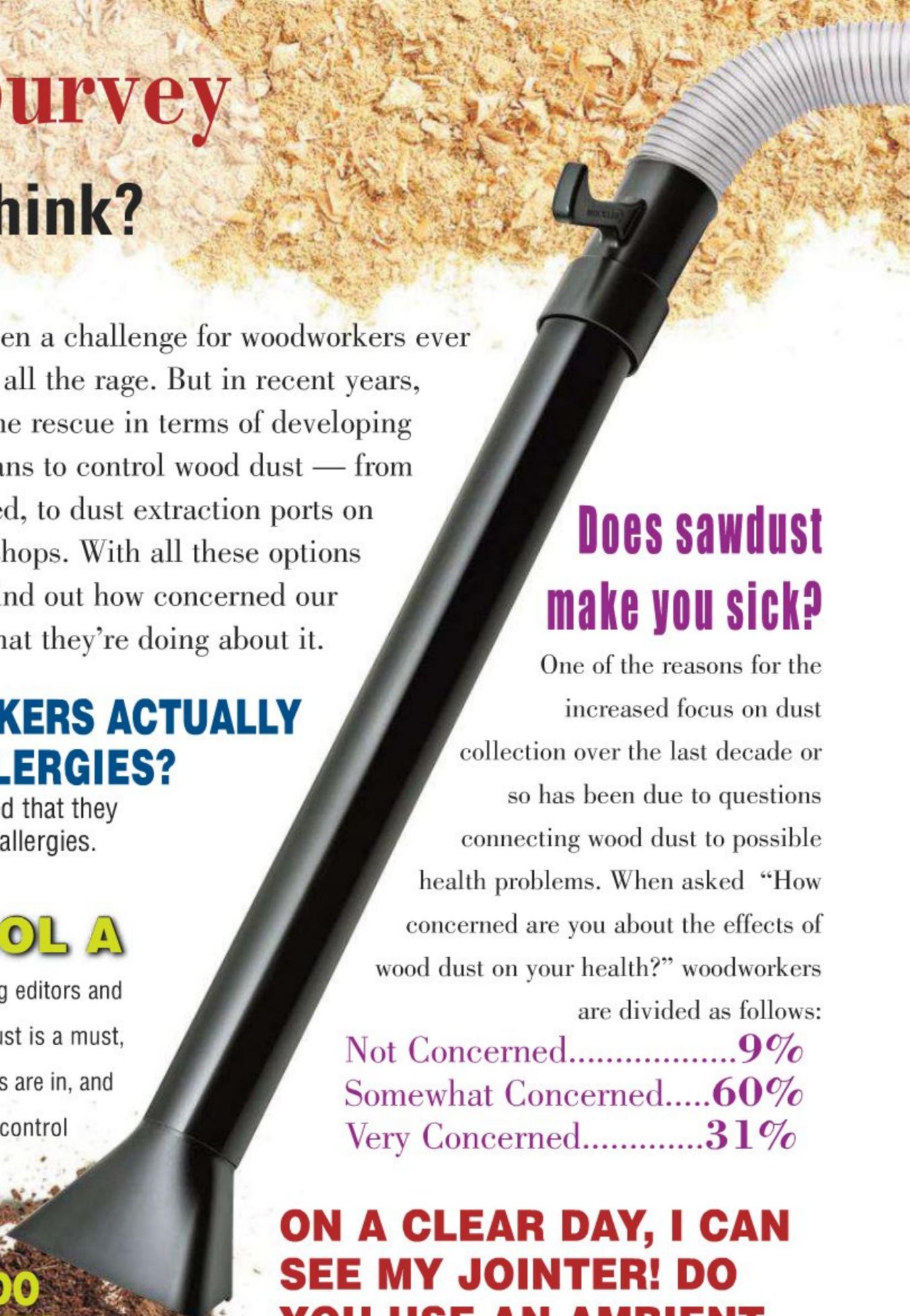
One of the reasons for the increased focus on dust collection over the last decade or so has been due to questions connecting wood dust to possible health problems. When asked "How concerned are you about the effects of wood dust on your health?" woodworkers are divided as follows:

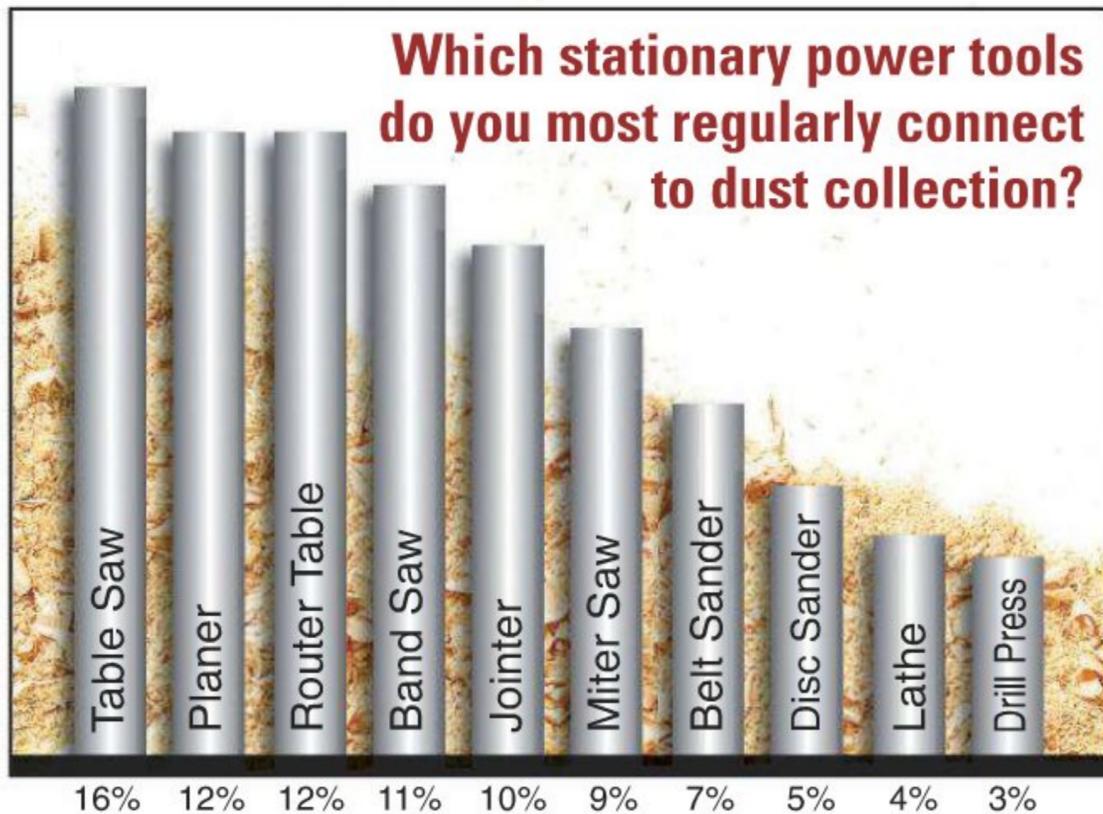
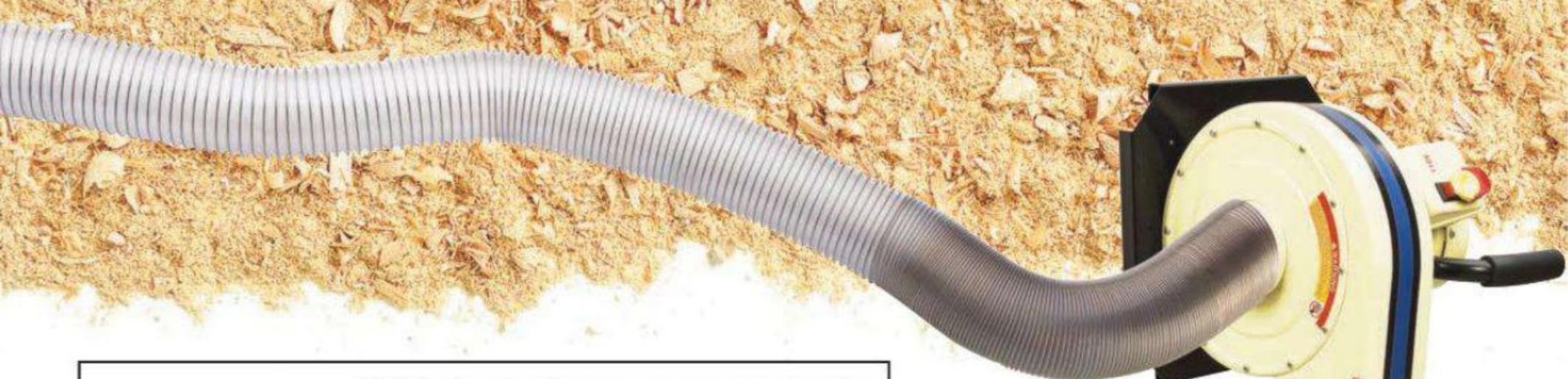
Not Concerned.....**9%**  
Somewhat Concerned....**60%**  
Very Concerned.....**31%**

### ON A CLEAR DAY, I CAN SEE MY JOINTER! DO YOU USE AN AMBIENT AIR FILTER?

Only **14%** of woodworkers clear the air in their workshops with ambient

air filters. Even when the survey results were filtered to only include those woodworkers who know that they have wood dust allergies, those using an ambient air filter only increased to **14.5%**.





## HOW DO YOU MOVE YOUR DUST?

**35%** of woodworkers, the largest percentage of the group, use flexible 4- or 5-inch hose. PVC plumbing pipe was second at **12%**, unless you count "I don't use ductwork" ... which came in at roughly **20%**.

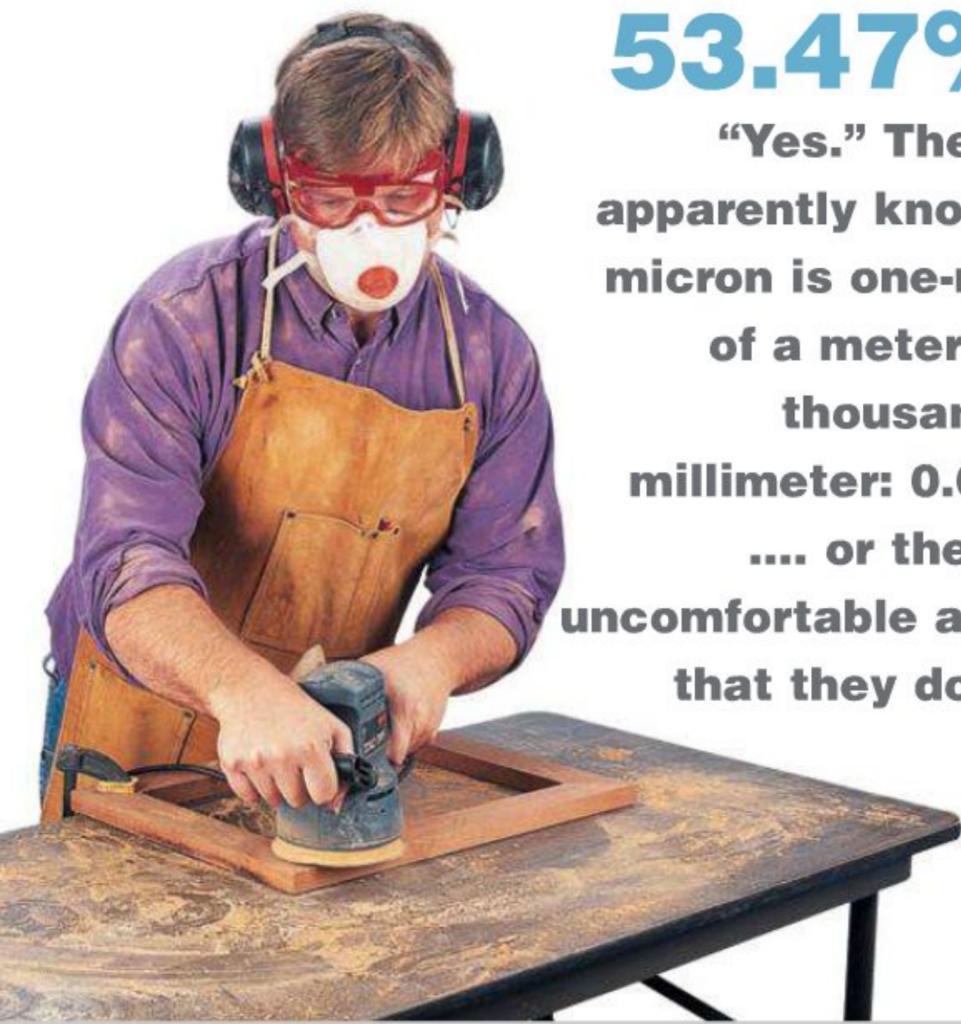


## DIY DUST COLLECTORS: WHAT PERCENTAGE OF WOODWORKERS USE SHOP-MADE DUST CONTROL DEVICES?

Fully one-third (**33%**) of woodworkers are currently using some sort of dust control device or machine that they made themselves!

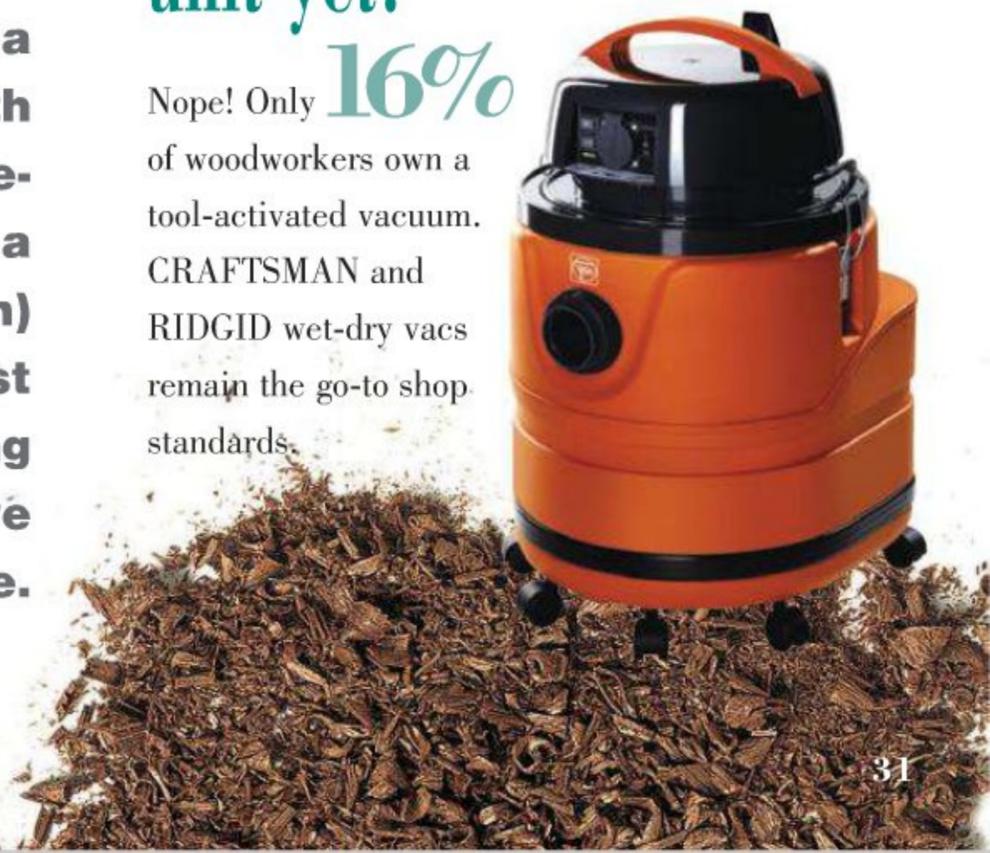
### DO YOU KNOW THE TECHNICAL DIFFERENCE BETWEEN A 1-MICRON AND 5-MICRON AMBIENT AIR FILTER?

**53.47%** said "Yes." These folks apparently know that a micron is one-millionth of a meter (or one-thousandth of a millimeter: 0.001 mm) ... or they're just uncomfortable admitting that they don't have a clue.



## Shop vacuums are on the top of the heap for dust control right now... do you have a tool-activated unit yet?

Nope! Only **16%** of woodworkers own a tool-activated vacuum. CRAFTSMAN and RIDGID wet-dry vacs remain the go-to shop standards.



# A Bedside Cabinet

By Ian Kirby

*By blending hand tool use with machine techniques, designer Ian Kirby has created an elegant cabinet. His overlay panels, used to highlight stunning wood figure, are undisturbed by moldings. Machine-made loose tenons hold the frame together and grooves fit the frame to the panel, while biscuits join the sides to the back, forming the case.*



*This photograph and illustration show the basic anatomy of the structure. Mortise-and-tenon corner joints hold the frame together. The same machine setup is used to cut the grooves in the frame and the panel.*

**F**rame and panel construction has been called the building block of solid wood furniture, and for good reason. That is because the development of this method widened the ability of woodworkers to make durable and practical case goods beyond anything that had come before it. If you are going to make furniture out of solid wood, you need to have a grasp on the process and methods involved in frame and panel construction — which is why, when we developed the collection of projects in our *Way to Woodwork* DVD series (*Editor's Note: see page 52 for more on the DVDs*), we included two different frame and panel projects. Of course, all frame and panel pieces have considerable similarities. The white oak bookcase that we featured in the DVD series and in the February magazine issue, and this bedside table, are no exceptions. But while the bookcase utilized raised and fielded panels, the bedside cabinet has a different sort of panel altogether (more on that shortly). The other main difference between the two is that by hanging a door onto a casework project, you create a cabinet. Making the door is just another variation on the frame and panel, but fitting and hanging a door is another set of skills and techniques to add to your repertoire.

### Overlay or Plant-on Panels

As mentioned, frame and panels are used to make the sides, the back and the door of this bedside cabinet. This particular construction is known as overlay panels. A glance at the photographs and the diagrams explains that these frames and panels are grooved in such a way that the panel sits atop the frame — or “overlays” it. This version of the frame and panel contrasts in many ways to its relative that uses a raised and fielded panel, so I am going to take the opportunity to expand on their differences.

Technically and visually, the overlay panel is simpler than the raised and fielded one. Technically, because to get the panel to fit into the frame, you need only one machine setting to cut the same size groove into both the parts. The groove can be made



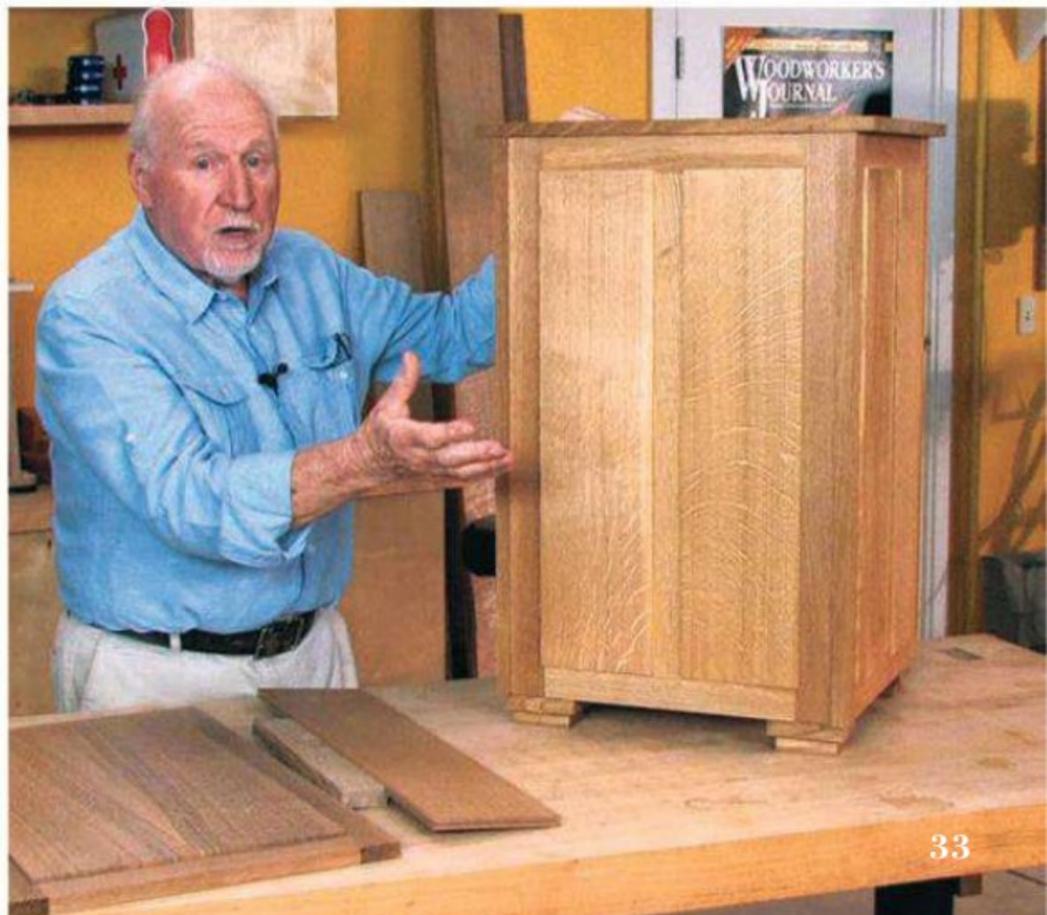
**Typical Overlay Panel Section**

on a table saw using a 1/8" kerf blade. Alternatively, it can be made on a router table using a slot cutter. In both cases, the frame is set so that the wall of the slot is a hair less in width than the width of the cutter or groove. That will allow for an easy-sliding push fit when the two parts are brought together.

One step that is important in this sort of frame and panel construction is that you should make the corner joints of the frame and panel before you cut the panel groove. Once made, clamp the frame together and plane flush any misalignments of the joint line on the face of the frame. You are now two steps ahead. First, this will ensure that when you cut the grooves in the frame pieces they will be properly aligned. Second, it is hardly possible to plane any joint line misalignment once the assembly is glued, because the panel is in the way — which is not the case with the frame on a raised and fielded panel assembly.

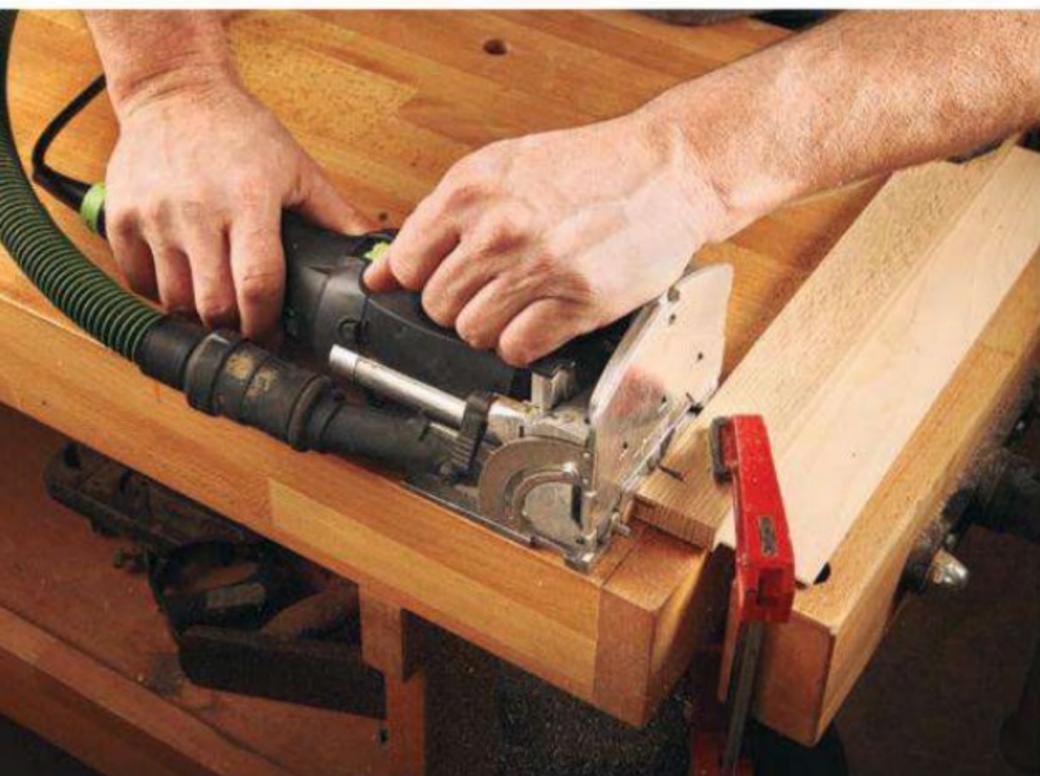
Visually, the overlay panel is simpler than the raised and

*The back and sides of the box are frames and panels divided with a muntin, which dictates the width of the piece. A butt joint, positioned and strengthened with biscuits, attaches the sides to the back.*

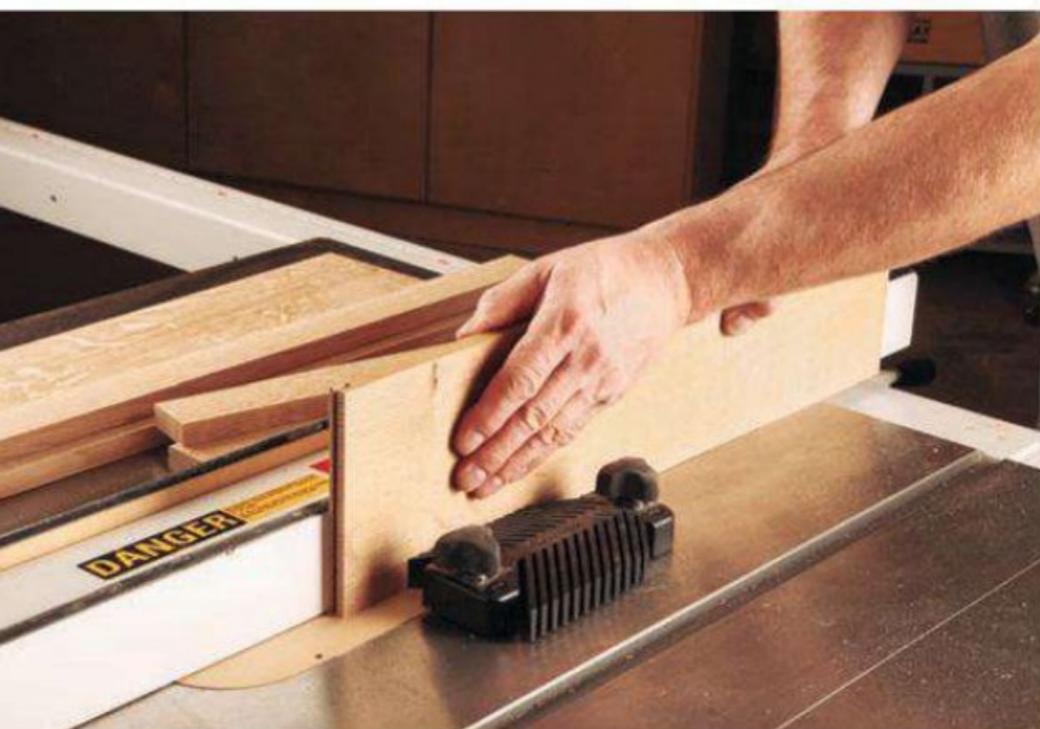




**The grooves in the frame and the panel parts are all made with the same cutter setting. They are easily made on a table saw or a router table.**



**The stiles, rails and muntins are joined using loose tenons (above). The author used the Festool Domino machine for his mortises; the company's loose tenons, made of European beech, look like dominoes.**



**The same setup that formed the grooves in the rails is also used to cut the grooves in the panels. This is one of the benefits of the overlay frame and panel design. You must make the frame before you make the panel.**

*“If you are going to make furniture out of solid wood, you need to have a grasp on the process and methods involved in frame and panel construction...”*

fielded panel because it's a flat panel with no highlights and shadows which come from raised and fielded moldings. This simplicity is an opportunity to use wood that has a strong grain or color character. It might be any extraordinary colorful piece of cocobolo or a wild tiger-striped pattern on a piece of maple or a quartersawn oak board with perfectly dappled silver grain.

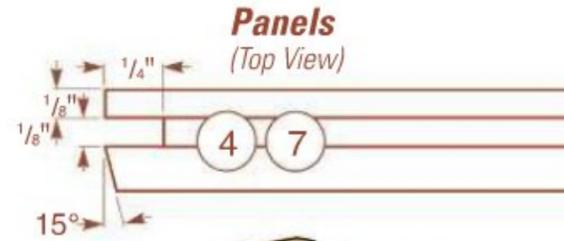
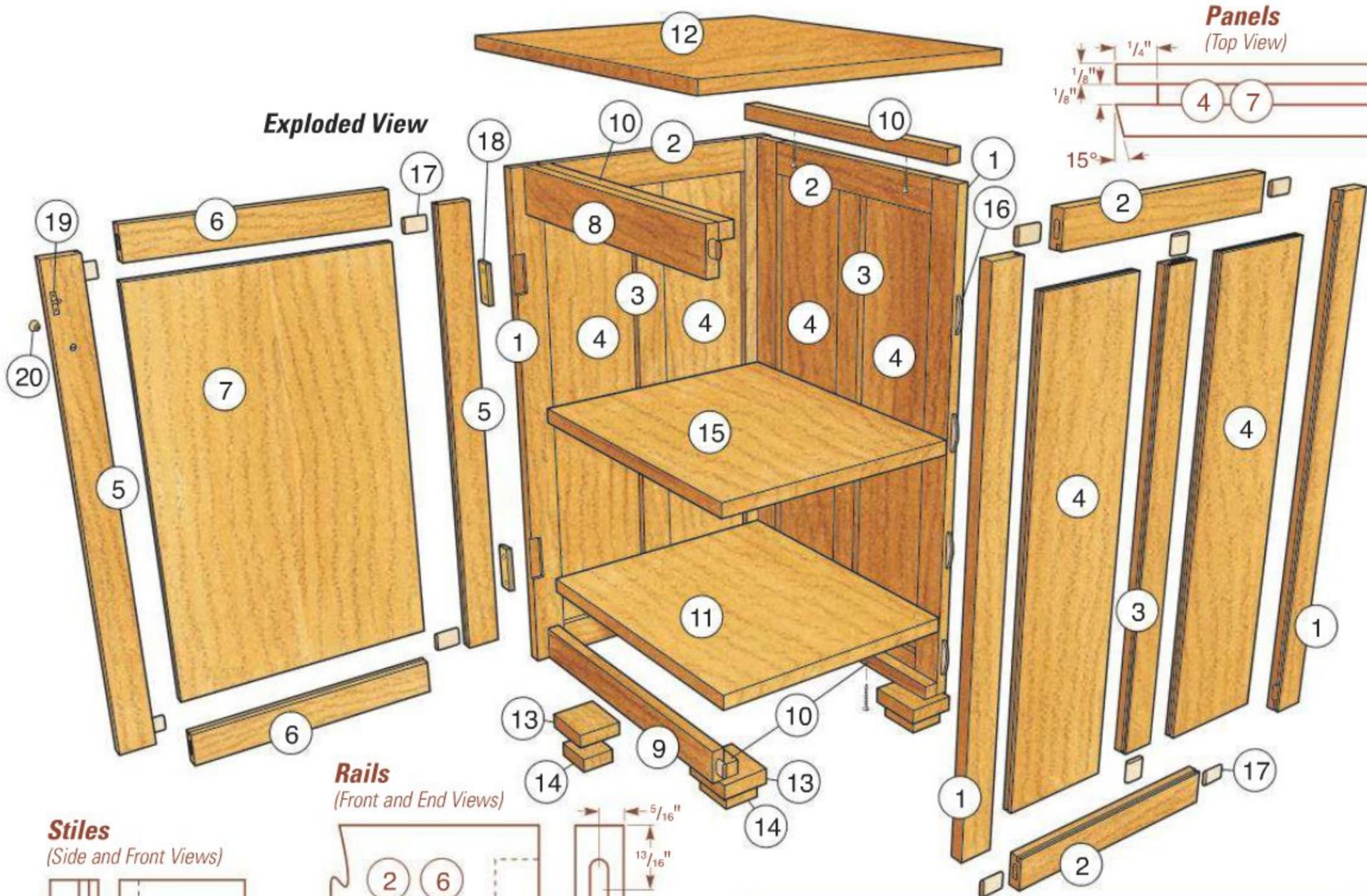
But simplicity is always a two-edged sword. In the case of the plant-on frame and panel, there are two things you must attend to. One is major and one is minor. The major one is getting the two components — the frame and the panel — to be in proportional harmony individually and in the overall. The proportion of a raised and fielded panel can be manipulated within the stiles and rails because the molding around the panel can be made narrower or wider. As well, the molding can be made a different shape, and it can run across the end grain on the top and bottom, or not. Those are variations you can't make with a plant-on panel. My solution to getting plant-on panel proportions right is generally to make them narrower. You can see what I mean on the sides and back of this bedside cabinet. The door, on the other hand, has a wide panel without vertical division. If the door's book-matched pieces had not been available, I would have probably chosen three narrow panels to make the door.

The minor problem with the panel is what to do about the square edges that stand proud of the frame. They are only 3/16" to 1/4", but that square shape looks very uncomfortable. The answer is to shape the edges at an angle of about 15°. You can do it with a plane or on the table saw. Once you've angled the edges, break their corners with fine sandpaper.

The joinery used to make this piece of furniture can be done using machines commonly found in a home workshop, but the finished surfaces are best prepared with a hand plane. This combination of machine and hand tool makes for an exquisite result. I make no bones about the fact that planing the surfaces inside and out was quick and easy because every part was selected from straight-grained quartersawn white oak. Regardless of your skill level, don't think of this “best quality material” as an extravagance. Realize instead that it makes the most economic use of your time because the wood works easier. Its cost, compared to the cost of your workshop setup, is marginal, and the quality shows through in the finished piece.

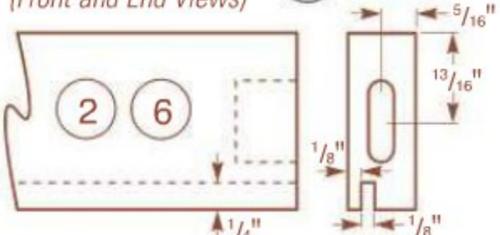
### **Prepare the Parts**

Begin by preparing the parts for the sides, the back, and the door. The frames pieces are all 5/8" thick, with the panels 7/16" thick. Rip the frame material to width and then cut the stiles and rails to length. At this stage mark each piece with a face side and a face edge mark. Choose the best-looking face to go outside and make the other side the face side. This is the vital step in machining the joints and the grooves in the right place



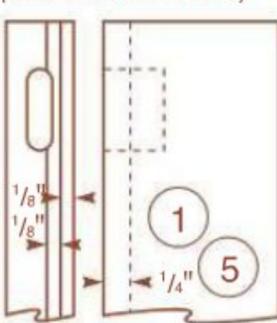
**Exploded View**

**Rails**  
(Front and End Views)

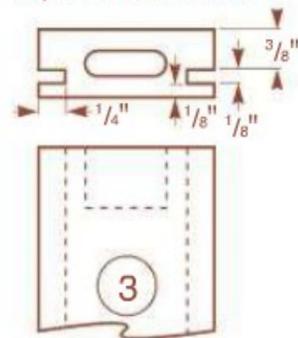


Note: Mortises are centered at ends of the rails (pieces 2, 6, 8, and 9) and muntins (pieces 3). Matching mortises are based on these locations.

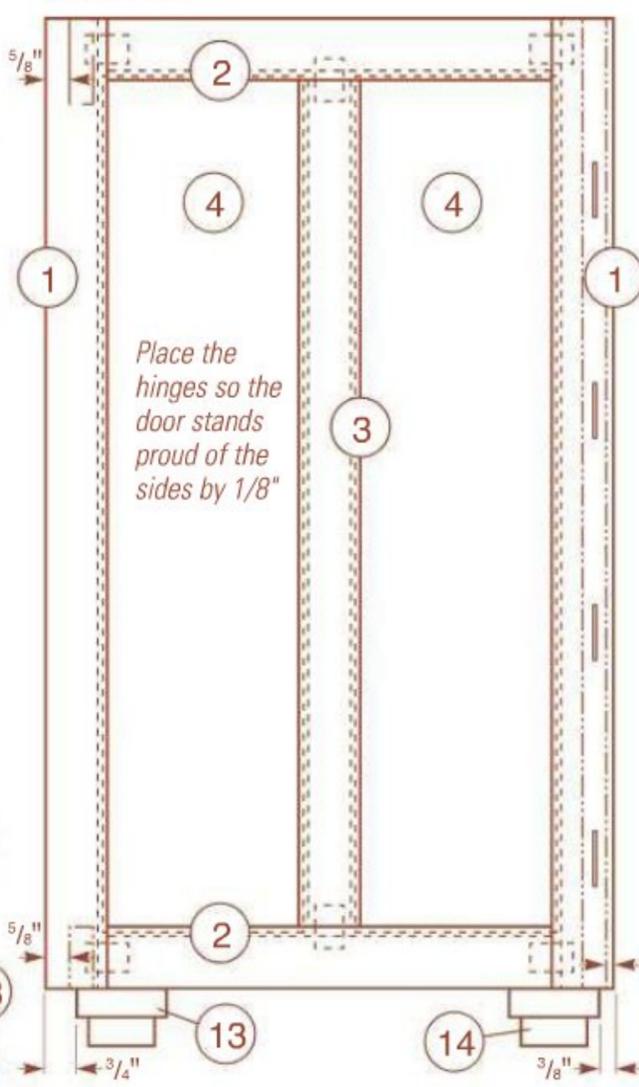
**Stiles**  
(Side and Front Views)



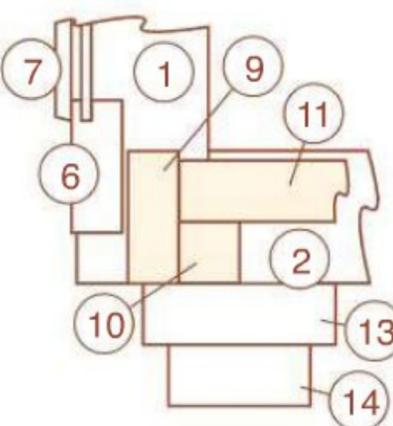
**Muntins**  
(Top and Front Views)



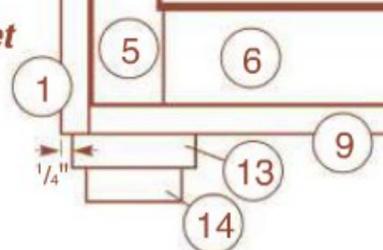
**Side Assembly**  
(Inside View)



**Lower Rail, Ledger & Bottom Detail**



**Foot Offset**  
(Front View)



**MATERIAL LIST**

	<b>T x W x L</b>
1 Case Stiles (6)	5/8" x 1 5/8" x 25 1/2"
2 Case Rails (6)	5/8" x 1 5/8" x 11 3/4"
3 Case Muntins (3)	5/8" x 1 5/8" x 22 1/4"
4 Case Panels (6)	7/16" x 5 5/16" x 22 1/4"
5 Door Stiles (2)	5/8" x 1 5/8" x 22 3/4"
6 Door Rails (2)	5/8" x 1 5/8" x 11 1/8"
7 Door Panel (1)	7/16" x 12 7/8" x 19 3/4"
8 Upper Rail (1)	5/8" x 2 1/4" x 15"
9 Lower Rail (1)	5/8" x 1 5/8" x 15"
10 Ledgers (4)	3/4" x 3/4" x 15"
11 Bottom (1)	3/4" x 12 7/8" x 15"
12 Top (1)	5/8" x 15 5/8" x 18"
13 Large Foot Block (4)	3/4" x 2 3/8" x 2 3/4"
14 Small Foot Block (4)	3/4" x 1 3/4" x 2 1/8"
15 Shelf (1)	5/8" x 12 7/8" x 15"
16 Biscuits (8)	#20
17 Dominos (22)	5 x 30 mm
18 Hinges (2)	2" x 1" Brass
19 Door Catch (1)	Brass
20 Pull (1)	5/8" Diameter Brass



Set the saw blade to make the 15° angle cut on the overlay edges of the panels. The author takes a couple of passes with a hand plane to smooth out the machine marks on these angled surfaces.



After plowing the groove for the panel, the loose tenon (in this case a Domino) is fit into the stile and rail. Note that the groove runs all the way through the end of the stile.



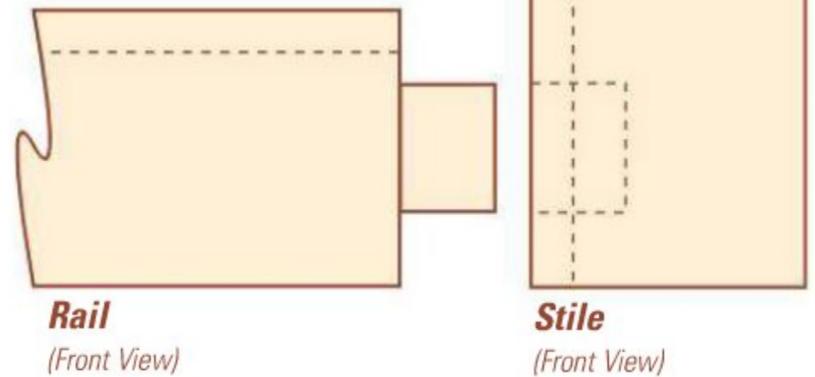
The panels with a muntin can be clamped together in one shot – as shown above. Make the process less hectic by gluing the muntin joints first and then assembling the rest of the panel components.

## Frame and Panel Construction

The angle on the overlay panel is cut onto the edge of the piece that stands proud of the rails and stiles.



The Domino loose tenon system worked well for this cabinet. Other loose tenon techniques or dowel joinery would work perfectly well to make these joints. The panels must float freely in the grooves to accommodate seasonal wood movement.



to get the best-looking side on the outside. For in-depth information about the face side and face edge marking system, you can go to [woodworking.com](http://woodworking.com) and check out the Way to Woodwork section (under the “Learn” tab). The *Material List* on page 35 will give you the dimensions that you’ll need to make all the parts for this piece.

Now that you have prepared the stock and cut the components to size, you are ready to move on to making the joints. There are three pieces that need to be butt joined: the top, bottom and shelf. This is an appropriate point in time to glue and clamp those pieces together so they’ll be prepared when you need them later on. If you choose to use a large panel for the door as I did, make that butt joint as well.

### Cut the Joints

Joining the frames is the first step in this construction. I used a Festool Domino machine to make the frame joints. The tool makes what amounts to a mortise-and-tenon joint but, in this case, the tenon is what we call a “loose tenon.” (See the photo, center left.) The machine makes a mortise hole in both pieces of wood. The tenon is a piece of European beech hardwood made to fit the combined mortise holes in width and thickness and length. The loose tenon joint has been used in industry for many years; there’s nothing new about it. The industrial machine used to make the holes is called a slot mortiser; unfortunately it’s a 3-phase machine that costs a few thousand dollars. The Domino machine is fast and efficient; it makes short work of the frames. (Editor’s Note: in this issue’s Skill Builder department, Bill Hylton introduces loose tenons made with a handheld router.)

*“Making the door is just another variation on the frame and panel, but fitting and hanging a door is another set of skills and techniques to add to your repertoire.”*

You'll find the locations for the mortises, as well as many other construction details, in the *Drawings* on page 35. Once the joints are cut, clamp the frames together and be sure that the parts are flush at the joint lines. If not, correct them by planing.

### Size the Panels

Once you've made the frames, cut the panels to size. This includes the panel that will go into the door. The *Drawings* should help you work out the dimensions. The panels on the sides and the back are formed from single pieces of solid wood, but as I've explained in previous articles and in the DVD series, there is more to making these panels than simply cutting them to size randomly from thickened lumber. There is an aesthetic component to this step in that you are choosing to cut the panel from the board where the grain pattern and color is shown to the best advantage. If that means some waste because the best-looking panel is in the middle of the board, so be it. Additionally, spend some time figuring out which of those panels will look the best paired with another in the sides and back that you will be making. This process of selecting the parts and composing them as a whole is a vital part of a hand-made product.

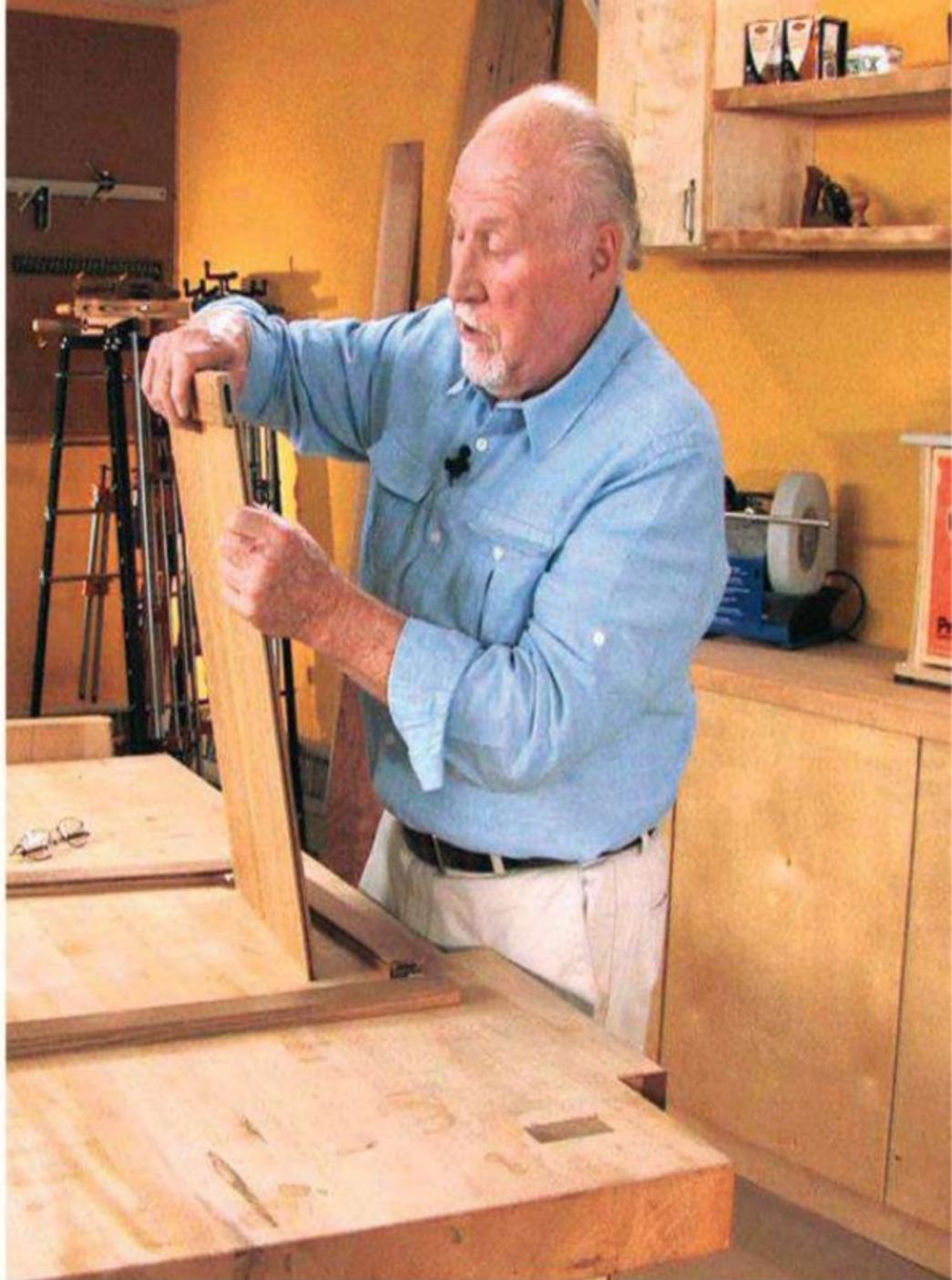
### Cut the Grooves

Cut the grooves on your table saw or with a slot cutter on a router. Positioning the fence is critical and best done with the help of some test pieces. The gap between fence and cutting should be a hair less than the width of the cut. In this way, the tongues will go into the groove as an easy push fit. Once again, you will find details for these grooves in the *Drawings*. It's now, when you are cutting all the grooves, that the face side and edge marks will orient the faces in the direction you want. Paying attention to the marks will put the correct face to the fence and bed, which gets the cut where it should be.

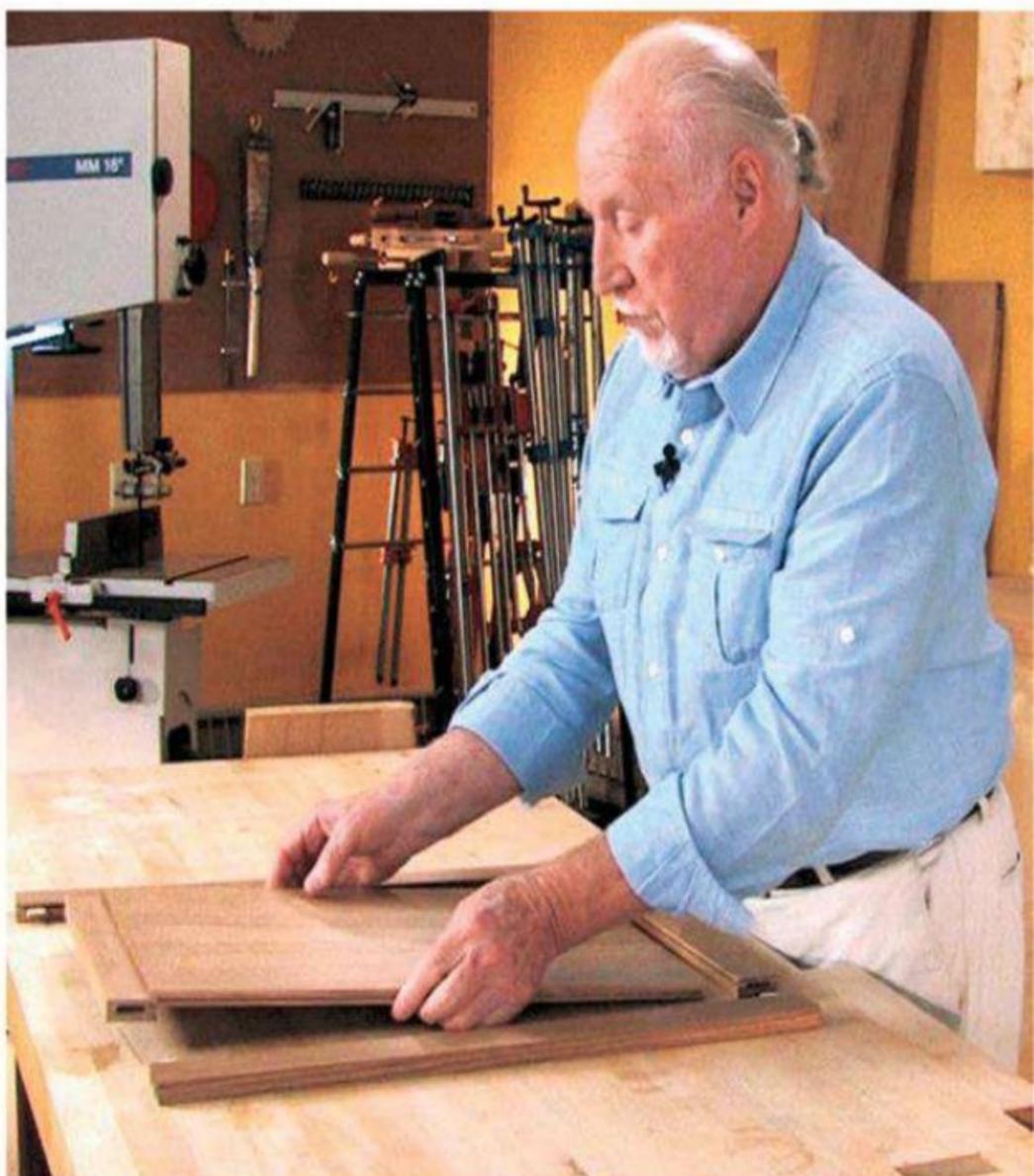
When you are done plowing the grooves into the sides of the panel, it is time to put the 15° angle onto the panels. You can do this with a plane, or as shown in the photo on the opposite page, using the table saw.

### Clean Up: Polish and Glue

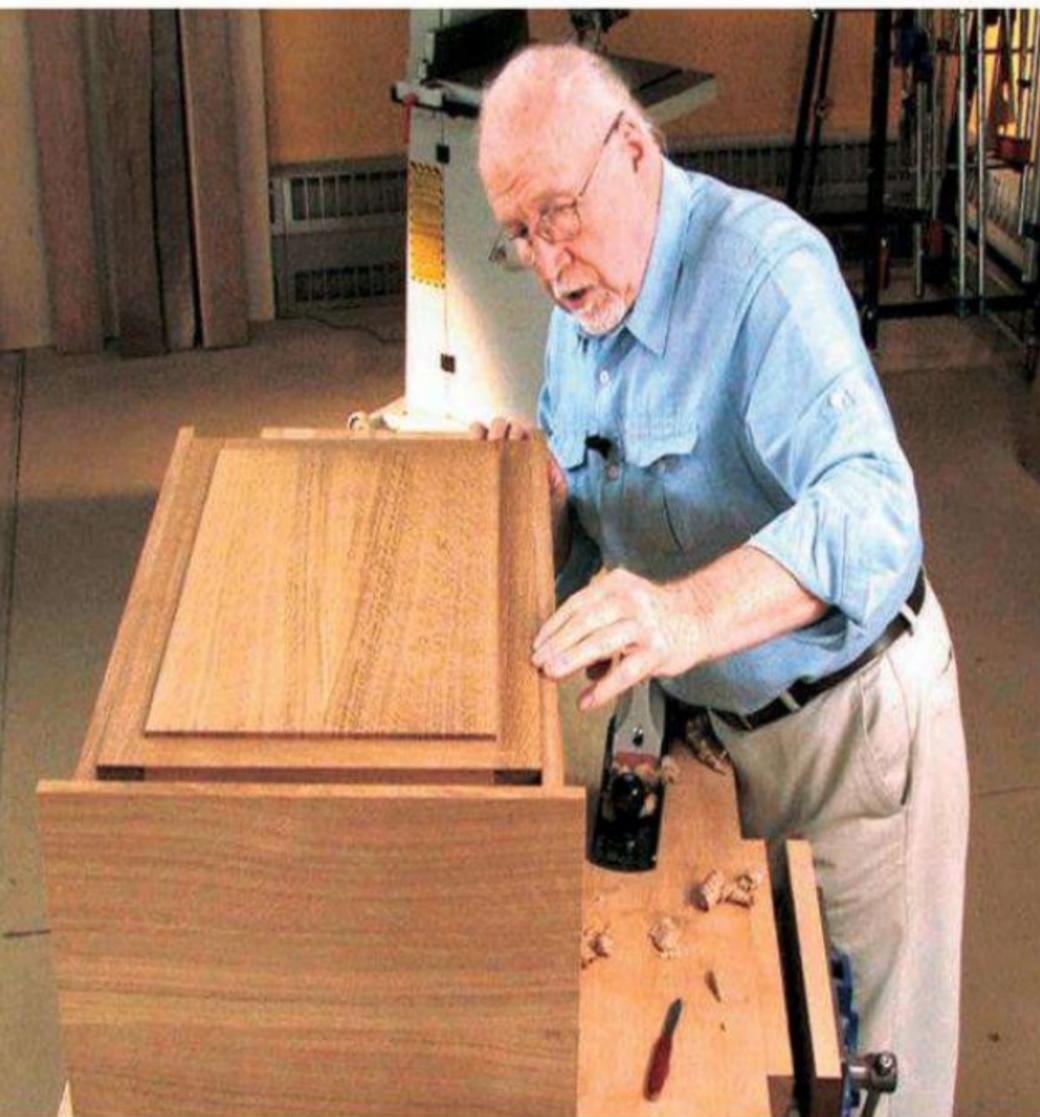
Once the mortise-and-tenon joints and the grooves are made, the machined surfaces can be planed smooth. In this instance, planing was made easy because the material had been carefully selected — in addition to its attractive figure, it planes beautifully. As stated earlier, I used straight-grained quartersawn white oak: a classic Arts & Crafts species. Before any sub-assemblies are glued and clamped together, I apply a polish (a “finish” in “States” terms) to the areas that would be difficult to



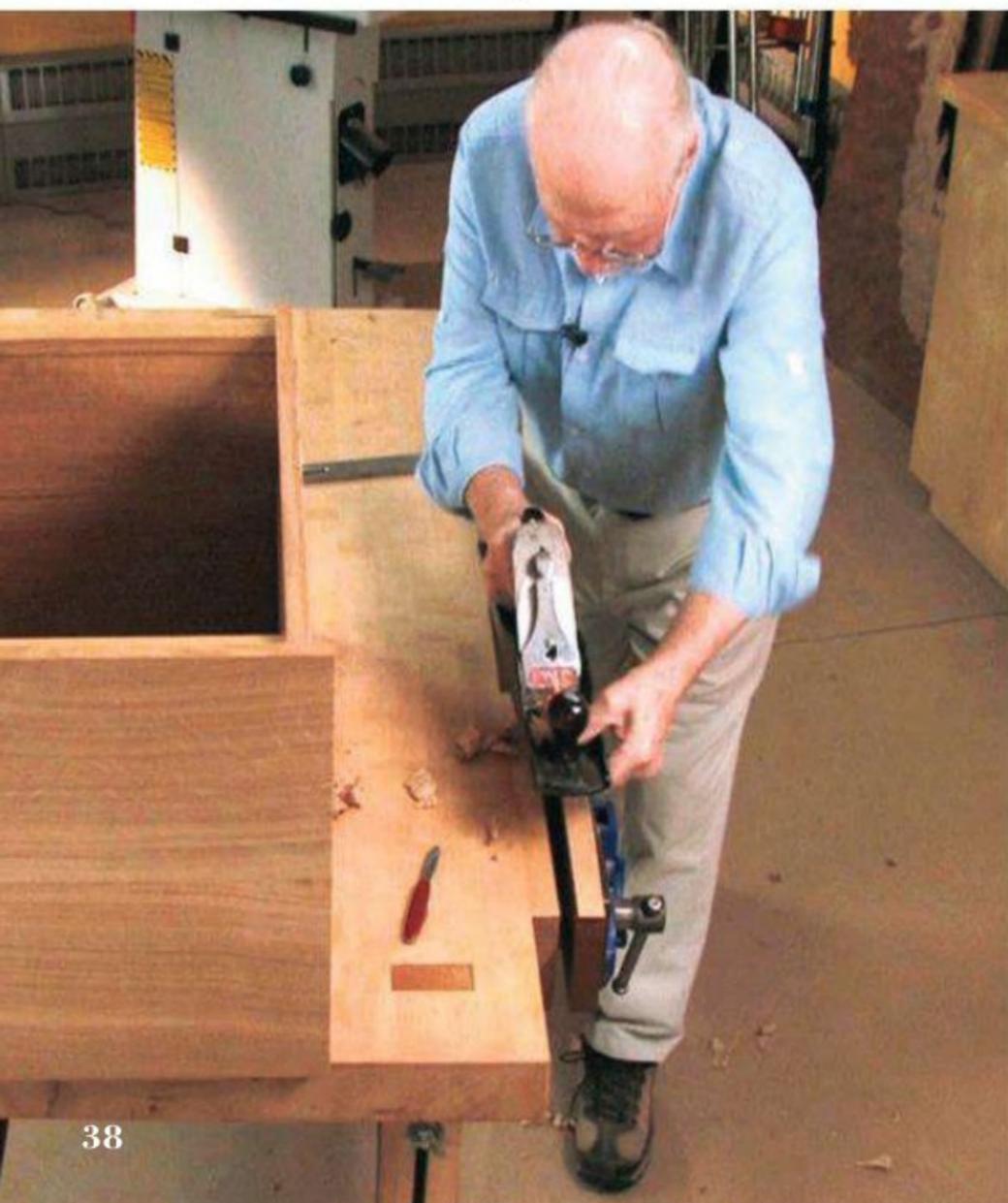
*Above and below, the author is shown dry fitting the cabinet door together. The door has a single book-matched panel surrounded by stiles and rails. An alternative to the book-matched construction would have been a three-panel door, with two muntins joined to the rails.*



*“Regardless of your skill level, don't think of this ‘best quality material’ as an extravagance. Realize instead that it makes the most economic use of your time because it works easier.”*



**The door is made about a sixteenth of an inch wider than the inside dimension of the case. Putting it together dry for the first time to check is always a joy. Below, the author planes the door to fit the opening.**



reach after assembly. Salad Bowl oil by General was the finish I chose for the cabinet. It is a durable finish that is easy to apply and builds up quickly. Gluing up the frame subassemblies is made easy because the frames are flat — even so, check for square and that the frames are out of winding.

### **Joining the Subassemblies**

Before I could assemble the case, mortises for the upper and lower rails at the front of the cabinet needed to be cut, as did the matching mortises on the rails themselves. Once again, the Domino loose tenon system was used here. That done, the next step is to join the subassemblies together. I butt joined the sides to the back, but to help align the joint during glue-up, I used biscuits as shown in the *Drawings*.

The biscuits were glued into the back panel and allowed to cure, to simplify the final glue-up. Now it's time for a dry clamping runthrough. Gluing and clamping, especially a large assembly like this one, is best done as a two-person effort. In this case, LiLi Jackson, who was my co-host in the DVD series, lent a hand. After the dry clamping, we glued and clamped the cabinet case together — as always, testing for square by checking the diagonals and making adjustments as needed.

With that step completed, mount the ledgers to the top and bottom of the cabinet. It's best to predrill holes in the ledgers, which are for the screws that will later secure the top and the bottom in place. The butt joined piece that you prepared earlier for the bottom can now be fitted. Plane off the machine marks and apply the polish. Do the same with the top. When the finish has cured, attach the top and bottom using screws driven up through the ledgers. Make the feet next, and glue them in place. Your cabinet will suddenly start to look like a piece of furniture.

### **Making and Fitting the Door**

The book-matched paneled door is made to fit into the space between the sides of the cabinet. The top and bottom edges of the door nest on the top and bottom front rails, which act as doorstops. These rails are set back so they hold the door standing proud of the edges of the cabinet about the same amount as the panel stands proud of the frame. A more traditional case construction would dovetail the top and bottom rails in place so they present an edge at the front as do the sides. In the traditional construction, you'd be required to fit all four edges of the door to the opening; in this construction, you need fit only one edge of the door. As you can see in the lead photographs, the rails are turned through 90° (see the *Drawings* for details) so they could be attached to the sides using a Domino. The length of the door is the same length as the side panels. The alignment of these parts, and the shadow caused by the door standing proud, make for a comfortable detail. The first step in hanging the door is fitting the door to the opening. Here, I planed the edge of the door to fit the width of the case opening (photos at left). There should be about 1/32" gap between the edges of the door and the sides of the cabinet before you move on to mounting the hinges.

## Fitting the Hinges

The door is hung using a pair of butt hinges. The preferred hinges are solid drawn brass. A less expensive alternative is pressed brass (get the solid ones: your work deserves it).

The area that is cut away to accept the hinge is known as the “hinge gain.” Properly done, the hinge should fit into the gain tightly so that the weight of the door and any other pressure is transferred to the end grain wood of the gain, not the screws. The process for installing the hinges is discussed and shown in the sidebar at right. It is not a task that can be done in a hurry, but a properly fitted door is a pleasure to use and one of the benefits of furniture that you make yourself.

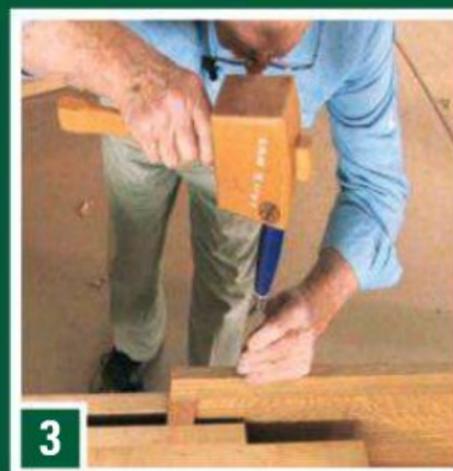
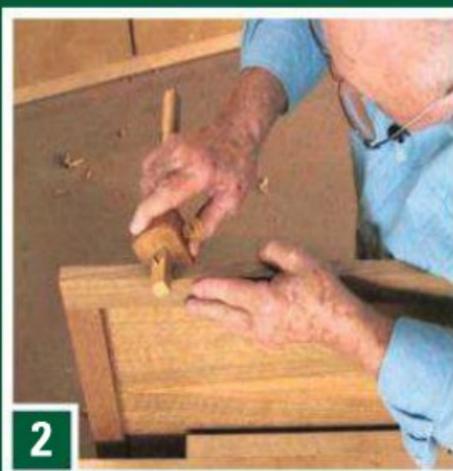
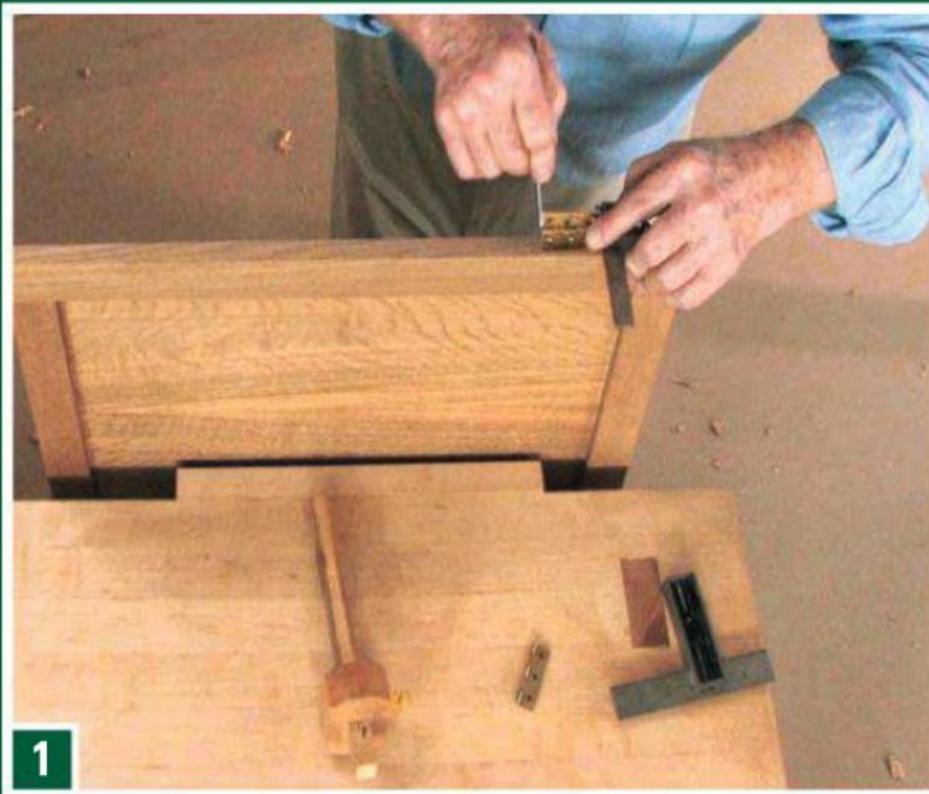
## The Last Details

With the door hung and swinging freely, there are a few more details to complete. Although the rails on the front of the cabinet act like a doorstop, the door still needs a door catch. I used a solid brass catch that securely holds the door in place and both closes and opens with a substantive click. The pull on the cabinet door is likewise solid brass ... it matches the hinges and the door catch.

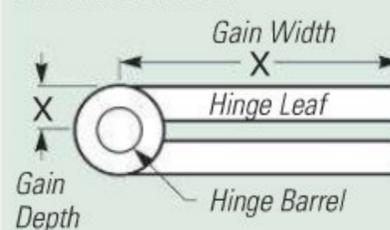
Earlier, you butt glued together a panel to become the shelf. It is time to fit the shelf into the cabinet opening. When it fits, plane it smooth and apply the finish. There are many ways to mount a shelf in the cabinet, but for the sake of simplicity and to continue the elegant look of this piece, I simply drilled shelf-pin holes into the stiles and did not make the placement of the shelf adjustable. I chose to locate it in one position, but the choice is certainly open to you. The last thing to do is break the edges of the top with worn sandpaper. Then apply final coats of finish until you are satisfied.

This little bedside cabinet is an excellent example of frame and panel construction and provides a good exercise in hanging a cabinet door. But more than that, it is a useful and beautiful piece of furniture that will provide years of service.

*Ian Kirby is a master woodworker in the British Arts and Crafts tradition and host of “The Way to Woodwork” DVDs.*



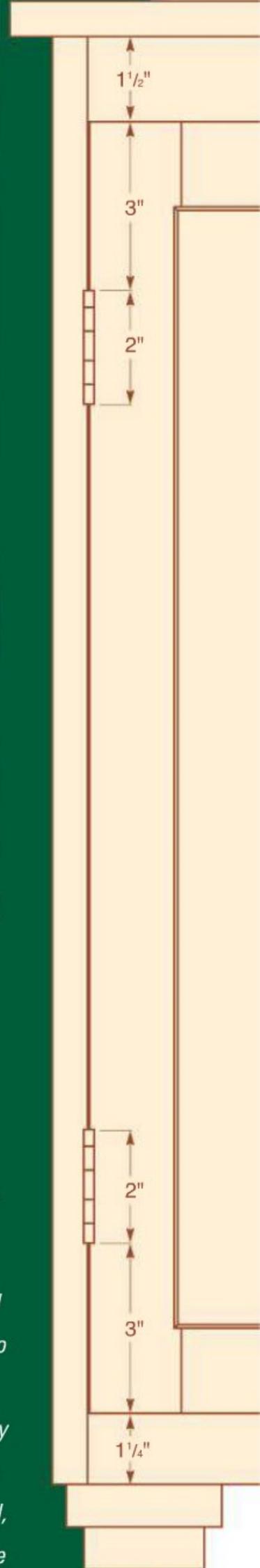
### Two Critical Hinge Gain Measurements



The area cut away to accept the hinge is called a hinge gain.

## Making a Hinge Gain

There is no formula as to where to position hinges, but they should end up equidistant from the top and bottom of the door. You mount them into the door first, holding the hinge in place and marking its length with a knife mark at each end (1). Square that mark across the wood with a try square. Now turn to your marking gauge (2). To mark the width, set the gauge with its fence on the flap and the spur to the center of the barrel, and scribe a line. Next, set the gauge to the depth. With the face of the hinge on the fence of the gauge, adjust the spur to the center of the hinge barrel and mark the wood. The waste can be removed with a 1" chisel (3). Start by cutting the end grain about 1/8" in from the knife line, then rough out the gain, staying 1/8" inside the lines. Complete the gain by chopping back until your last cut is in the knife lines. Drill pilot holes for the screws and put a steel screw in first, and then replace it with the brass screw. When you have completed these steps on the door, repeat them on the cabinet (4).







# Patio Garden Cart

*Flowers, veggies and herbs will thrive in this mobile cart. Made from cedar, it can be built in a weekend. You'll be planting in no time!*

By Rob Johnstone

**W**hile I cannot claim any skill or expertise when it comes to gardening, that does not keep me from truly enjoying it. Each year as the winter winds blow, I start in-depth planning, searching seed catalogs and websites to prepare for the arrival of planting season. And I know that I am not alone. For example, when one of my good friends found herself moving to a townhouse, she discovered that one of her only regrets was that her space to grow green things was so limited. So, between the two of us, we came up with this mobile cart as a solution to her problem.

It is a bit like an oversized planter box on wheels, but it has some nice features that add to its usability. For one thing, you don't have to bend over to "weed the garden"; at 42¼" tall, you are working at a comfortable level. The mobile feature allows you to move the cart around on your patio to the most advantageous position in terms of sunlight, but move it out of the way if you are entertaining on the patio — also, it can travel into the garage or other shelter to avoid seasonal frost damage. It has ample storage underneath for additional potted plants or gardening supplies. The cart was a big success last season, with my friend receiving compliments on the cart's attractive looks to go along with her veggies and flowers.

## Getting the Cart Started

One nice thing about this cart is that it is made from dimension lumber that is easily purchased from any lumberyard or big-box home center. I used Western red cedar for all of the 1x material and was intending to use cedar for the legs as well. Cedar, as you know, stands up to the weather well and resists rotting in a moist environment, and it will also turn a lovely silver color as it ages if you don't apply a finish to the wood. As will sometimes happen, I encountered a small hiccup the day I went shopping: the selection of 4 x 4 cedar was poor, mostly twisted and checked, so in this instance, I opted for Douglas fir 4 x 4s, and I was pleased with the results. If you, like me, decide to get your stock at a big-box store, take advantage of the fact that you can select your own wood and get the very best lumber that you can find. Stay away from large knots (small, tight knots are no problem), and avoid other problems by checking the lumber for twisting, cupping and other distortions. The time you take here selecting high quality stock will save you time and effort in the shop later — trust me on this.

Which brings me to one of my first tips: dimension lumber is milled to specific widths and thicknesses, but those dimensions can vary a bit. To accommodate this



**Although dimension lumber is milled to specific sizes and thicknesses, it is a good practice to rip all your parts to their exact size and not count on the accuracy of the pre-milled pieces.**

variation, I ripped the pieces to size, even if I was using a “full-width 1 x 10.” This step meant I could trust that all my pieces would match up well as I assembled them later. You will find all the parts and their dimensions in the *Material List* on the next page. So go ahead and start making some sawdust!

The sides, ends and cross braces (pieces 1 through 3) are the first components you will need to make. After ripping them to width, go ahead and cut them to length. I used a miter saw to cut most of the garden cart’s pieces to length, but a table saw, or even a handheld circular saw, will do the trick. Western red cedar 1x material is most commonly sold with one face surfaced smooth (but it’s not always 100% smooth; it is technically called hit-and-

miss milling, and it means just what it says) and one face left roughsawn. I chose to orient the smooth face of the wood to the outside of the box — but that choice is up to you; if you prefer the rough side out, go for it. Another detail to know is that 1x hit-and-miss surfaced cedar measures out to 7/8"-thick, not 3/4" like other softwood. If you choose to make your cart from pine or some other kind of wood, you will need to adjust some of the measurements you’ll find in the *Material List*.

The construction of this cart is blue-collar, meat-and-potatoes joinery. Butt joints rule the day, aided by nails and screws where appropriate. I also added

Titebond® III glue at times — it is virtually waterproof and supplied additional strength at some of these very simply constructed joints.

Nail (galvanized nails are the best here ... no rust marks later on) and glue the ends to the sides to create a four-sided rectangle. Next, test-fit the cross braces to the opening in the rectangle. They need to fit snugly. There are three cross braces: one is located exactly in the center of the rectangle; the other two fit tightly into each end of the box. Apply glue on the long edges of those two cross braces where they abut the ends. I nailed the pieces in place, setting the subassembly aside until the glue cured.

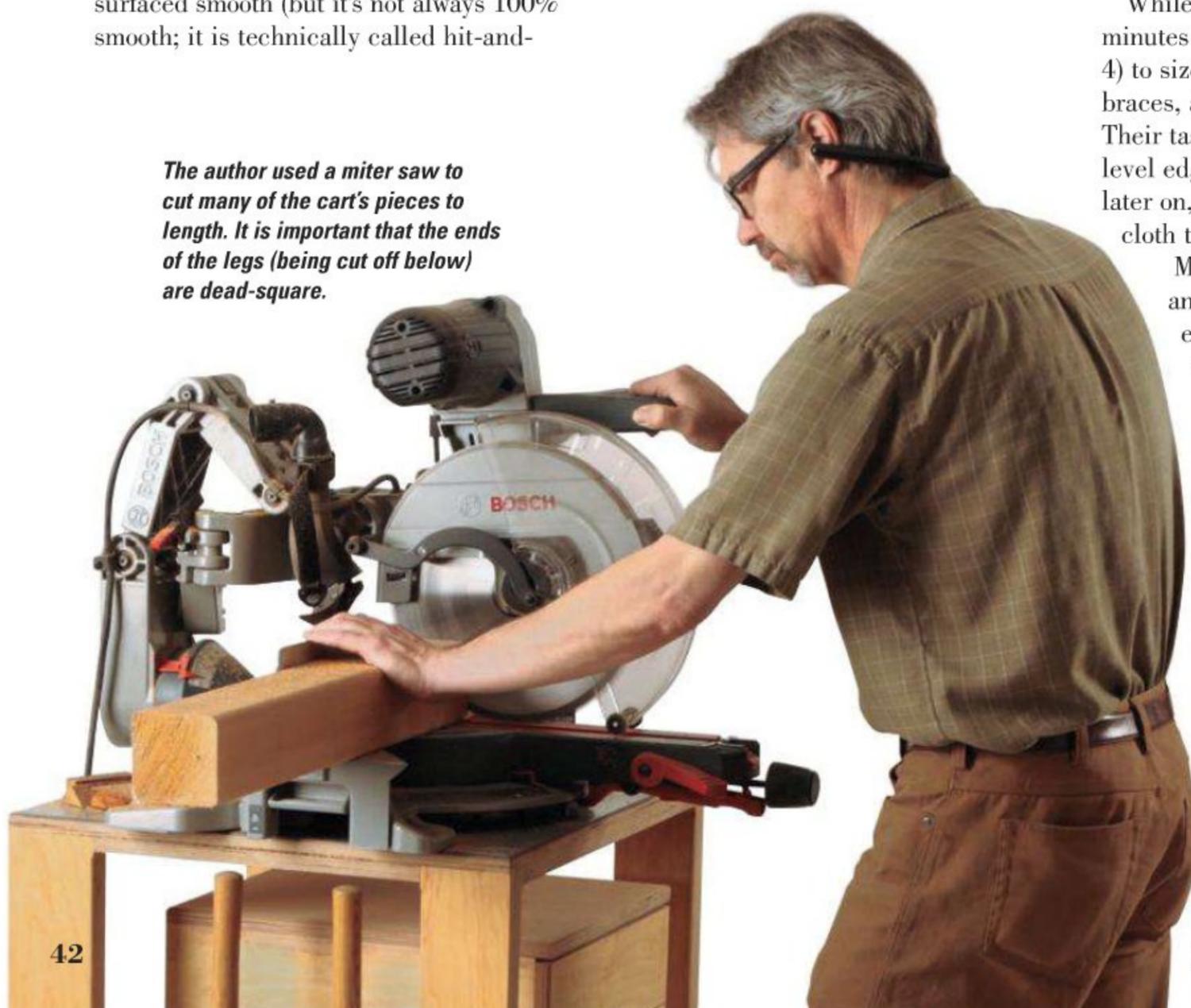
While the glue is drying, take a few minutes to rip and cut the cleats (pieces 4) to size. Fit them between the cross braces, and then nail them in place. Their task is to provide a continuous level edge around the inside of the box; later on, you’ll attach the hardware cloth to this.

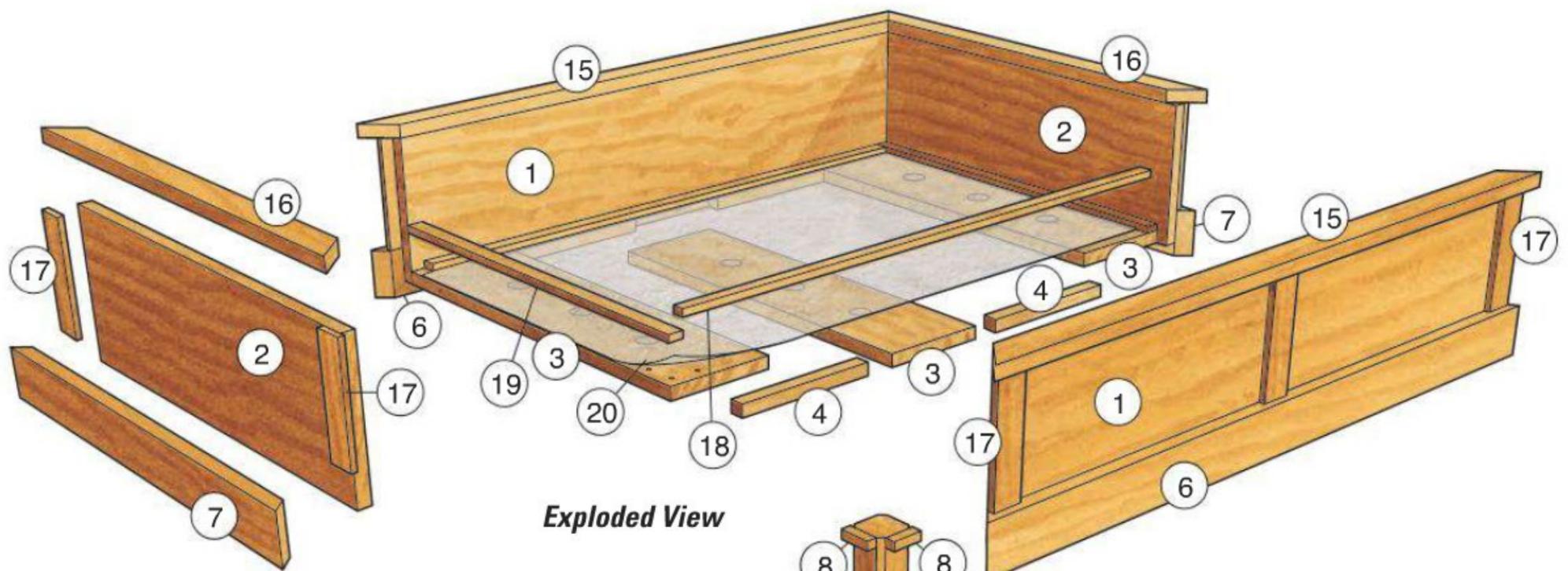
Moving on, grab your 4 x 4 stock and make four legs (pieces 5). The ends of the legs must be perfectly square to help align them on the cart. I formed chamfers on all four long corners of each leg. The chamfer measures 5/8" across the flat and adds a bit of shape to the leg. It also removes some “visual mass” from the legs, which are big square chunks of wood and would otherwise look heavy and clunky.

### **Mechanical Fasteners**

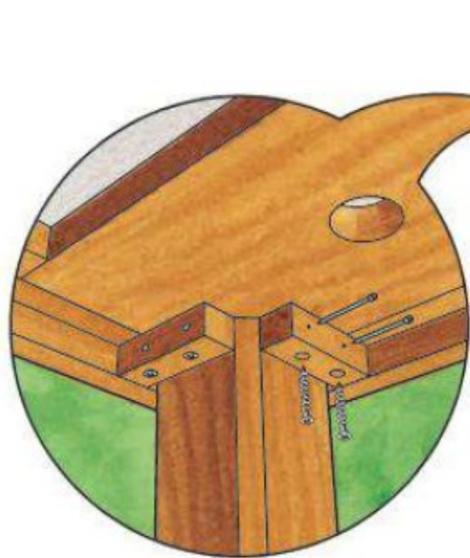
Before you attach the legs to the box subassembly, take a few minutes to add some screws to

**The author used a miter saw to cut many of the cart’s pieces to length. It is important that the ends of the legs (being cut off below) are dead-square.**

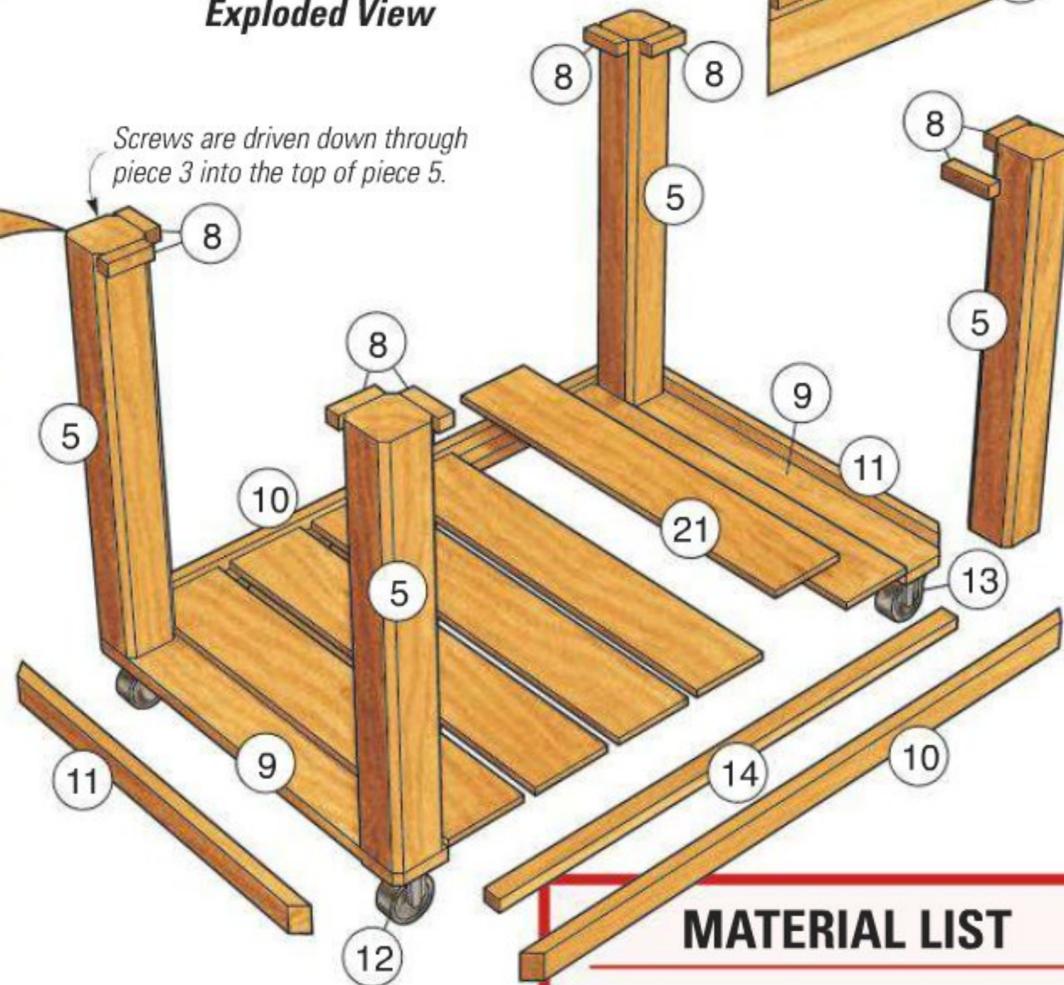




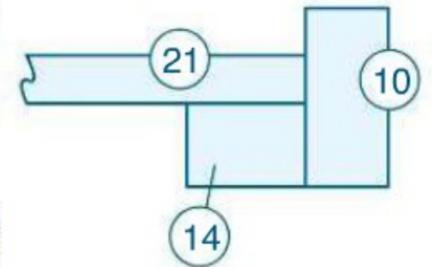
**Exploded View**



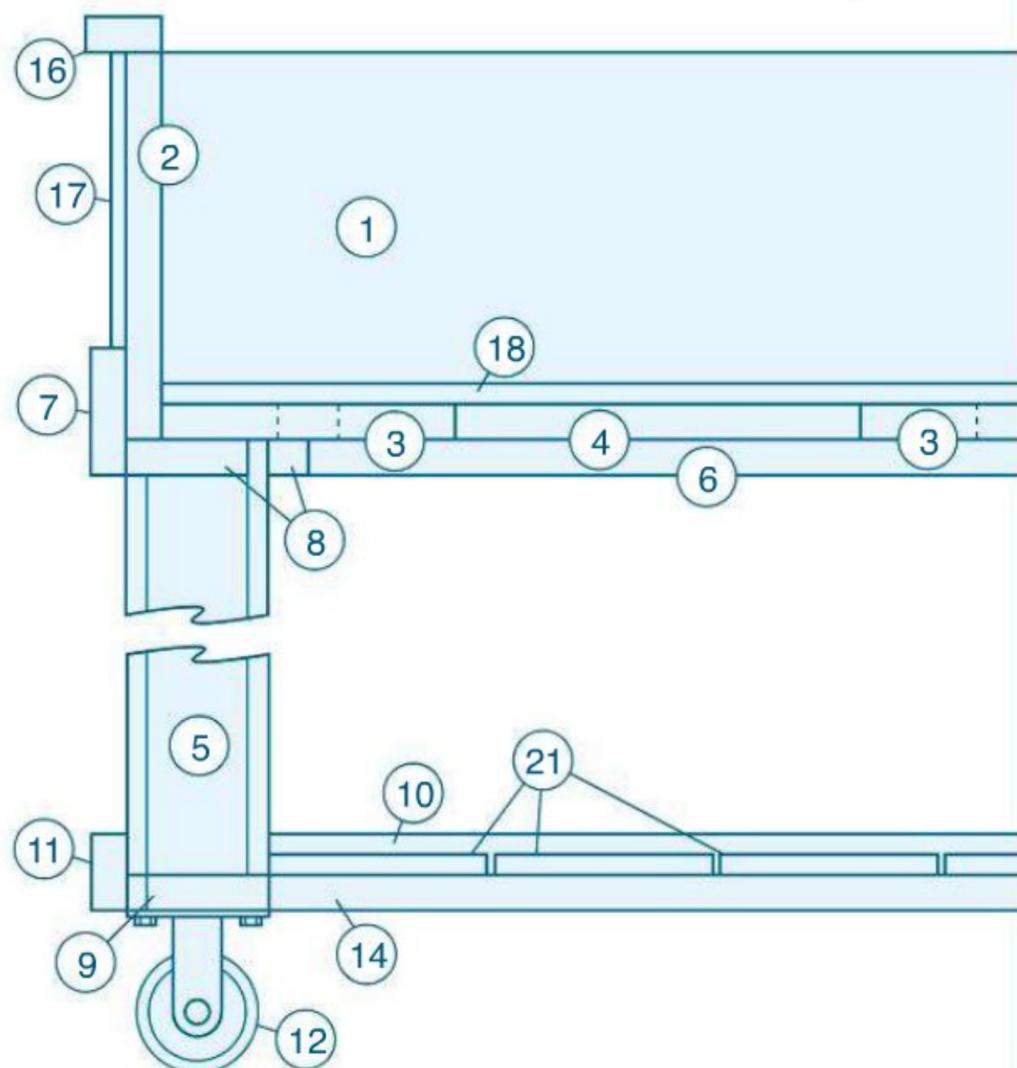
**Leg Mounting Detail**



**Bottom Cleat, Slat and Rail Location (Section View)**

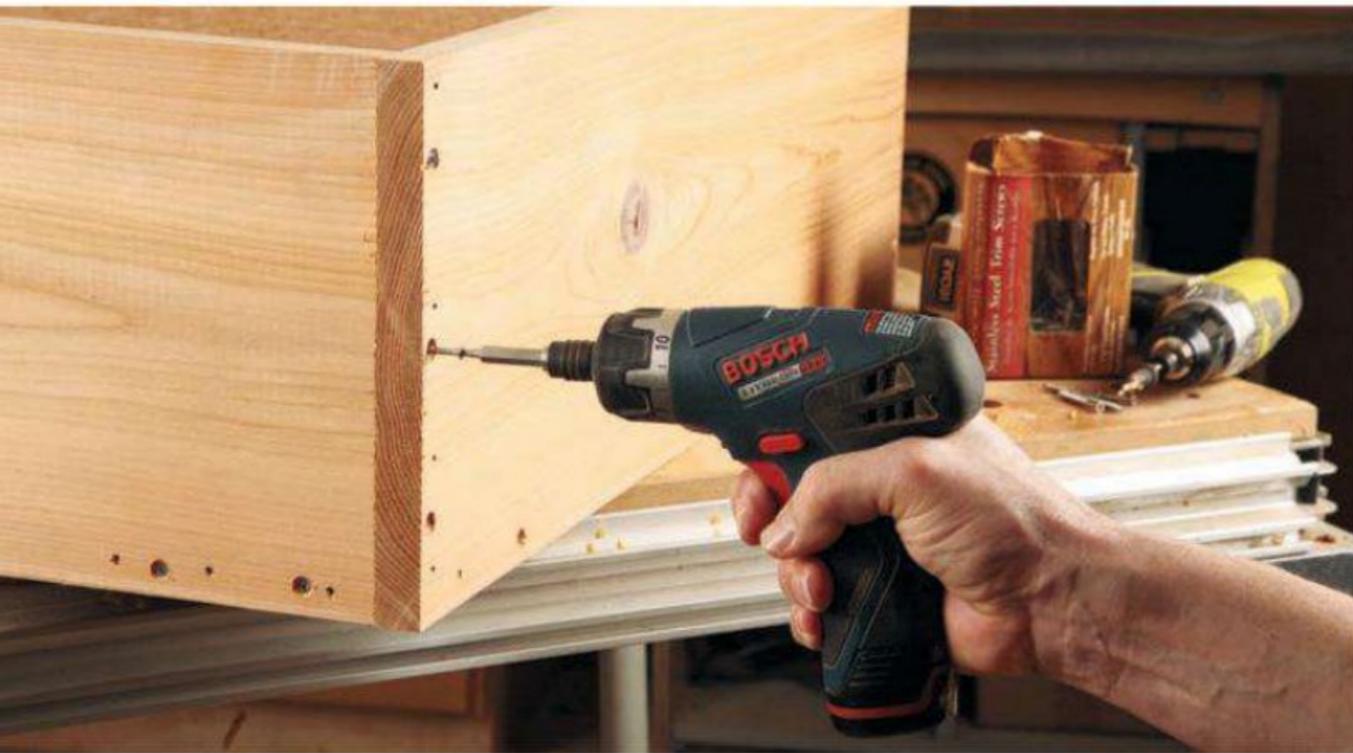


**Garden Cart (Section View)**



**MATERIAL LIST**

	<b>T x W x L</b>
1 Sides (2)	7/8" x 9 1/2" x 41 3/4"
2 Ends (2)	7/8" x 9 1/2" x 28 5/8"
3 Cross Braces (3)	7/8" x 7 1/4" x 26 3/8"
4 Cleats (4)	7/8" x 1" x 10"
5 Legs (4)	3 1/2" x 3 1/2" x 27"
6 Long Skirts (2)	7/8" x 3 3/8" x 45 1/4"
7 Short Skirts (2)	7/8" x 3 3/8" x 29 3/8"
8 Leg Anchors (8)	7/8" x 1" x 3"
9 Bottom Stretchers (2)	7/8" x 3 1/2" x 28 5/8"
10 Long Base Rails (2)	7/8" x 1 1/8" x 42 3/4"
11 Short Base Rails (2)	7/8" x 1 1/8" x 27 1/4"
12 Casters (2)	Plate (swivel)
13 Casters (2)	Plate (fixed)
14 Bottom Cleats (2)	7/8" x 1 1/4" x 36 1/2"
15 Long Top Trim (2)	7/8" x 1 1/8" x 45 5/8"
16 Short Top Trim (2)	7/8" x 1 1/8" x 30 1/4"
17 Decorative Trim (10)	3/8" x 1 1/8" x 7 1/4"
18 Long Screen Retainers (2)	1/2" x 1" x 39 3/4"
19 Short Screen Retainers (2)	1/2" x 1" x 26 3/8"
20 Hardware Cloth (1)	Cut to fit
21 Slats (6)	1/2" x 5 3/8" x 28 1/8"



*In addition to nails and water-resistant glue, the author drove non-rusting screws to bolster the strength of the butt joints. Skirts and decorative trim, attached later, cover the screw and nail holes, so there is no need for plugs and putty.*

the equation. It is best if the screws that you use, like the nails, are the type that won't easily rust. I used stainless-steel screws, but any type of coated screws designed for decks or outdoor use will work fine. As you can see in the photos above and below, I pre-drilled using a countersink-drill combination bit. Then I drove the screws home (photo above). All the screw and nail holes will be covered by trim of different sorts, so there is no need to plug them. Following that, miter and wrap the skirts (pieces 6 and 7) around the subassembly, securing them with nails.

Get ready for attaching the legs by ripping and cutting the leg anchors (pieces 8). They will act as braces, helping to secure the legs in place. Turn the box subassembly upside down, and check the *Drawings* for the anchor locations. Mark their locations, drill pilot holes and screw them in place. Then drill countersunk pilot holes up through the cross braces where the legs will connect. The next step is just awkward if you are doing it yourself — but if you have a friend to help, it's not bad at all. Using glue and screws, attach the legs to the box sub-

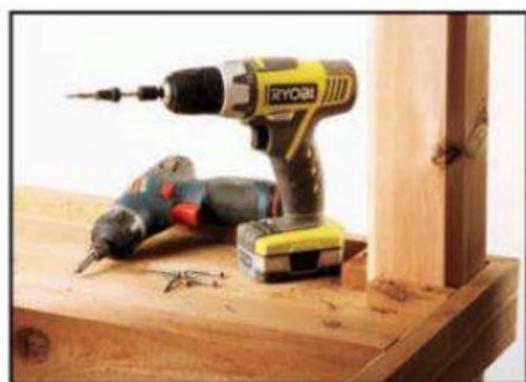
assembly. When that step is done and with the box upside down, check the legs for square. Make any adjustments and then drive nails through the leg anchors into the legs. To complete the leg assembly (which is not a typical construction), glue and screw the bottom stretchers (pieces 9) to the ends of the legs as shown in the photo below left. Now you have really made some progress!

### **Trim, Wheels and Wire Cloth**

With the box and legs combined into one large subassembly, the pace of construction will really accelerate. Before turning the project upright again, rip and cut to length the long and short base rails (pieces 10 and 11) and nail them in place with glue. They might look a little odd now as they don't quite meet, but in just a bit, you will trim their ends to align with the chamfer on the legs. It's also the right time to install the casters (pieces 12 and 13). I chose all-metal, 3"-diameter casters and purchased them from a big-box store. They work perfectly on a concrete patio. Depending on the surface that your cart will be rolling over, you may want larger-diameter wheels with rubber tires — especially if the cart will be on a deck, dealing with all those gaps between the decking. They'll probably cost a few bucks more, but they would likely make the cart more usable. I used two fixed casters and two swivel casters, all of them plate-mounted.

With the casters mounted and ready to roll, go ahead and flip the cart over on its wheels. Once again, step over to your table saw and rip material to make the bottom cleats (pieces 14). Install them using nails — be sure that the nails are not too long, as the points will stick out of the long base rails. As long as you are working on this lower section of the cart, grab a hand saw and slice off the ends of the base rails and the little corner of the bottom stretcher to create a finished looking corner. You can see a photo of the corner in the detail shot at the top of page 41.

Enough of that working down by the floor; from here on out most of your



*By combining a countersink drill bit in one drill/driver and a square drive bit in a second tool, you can speed the construction of projects like this considerably.*





**Because the plants will need to be watered, bore drainage holes in the cross braces. The author used a 1/2" paddle bit to make the openings (upper left). Below, brad nails secure the decorative trim.**



assembly will take place closer to waist level ... nice. The long and short top trim sit on the top edge of the sides and ends and form a picture frame-like accent to the cart. Miter them to fit, and then nail them in place. Once again, I chose the smooth surface of the cedar to face up (less chance for splinters, in my opinion).

1 1/2" drainage holes in the cross braces. See the *Drawings* for locations, although exact placement of the holes is not critical. Next, cut and fit the screen retainers, both long and short (pieces 18 and 19), but don't install them yet. The hardware cloth (piece 20), which is very heavy-duty wire screen material, can also be found at big-

The decorative trim (pieces 17) is the next set of parts that you need to make. If you use a thin-kerf blade on your table saw, you should not have a problem re-sawing the 3/8"-thick pieces from 7/8"-thick cedar. All 10 pieces are secured to the box with brad nails as shown in the lower photo at left. If you don't have a nail gun that shoots small nails, the old-style brad and hammer system still works great.

That's it for the outside aspect of the cart ... from here on in, you will be modifying the interior of the planting box. Start by drilling

Western red cedar is a durable wood that weathers well. Other species used in outdoor projects include cypress, white oak, teak and Spanish cedar.

box or hardware stores, and it is the next part to be made. Using a pair of aviator snips, cut the piece to size, fitting it from end to end and side to side inside the planter box. Now grab the screen retainers and use them to secure the hardware cloth in place. I used short nails for this task.

The final parts to make are the slats (pieces 21) which, when placed on top of the bottom cleats, form a shelf in the lower section of the cart. There should be small gaps between the slats when all six are in place to allow for drainage.

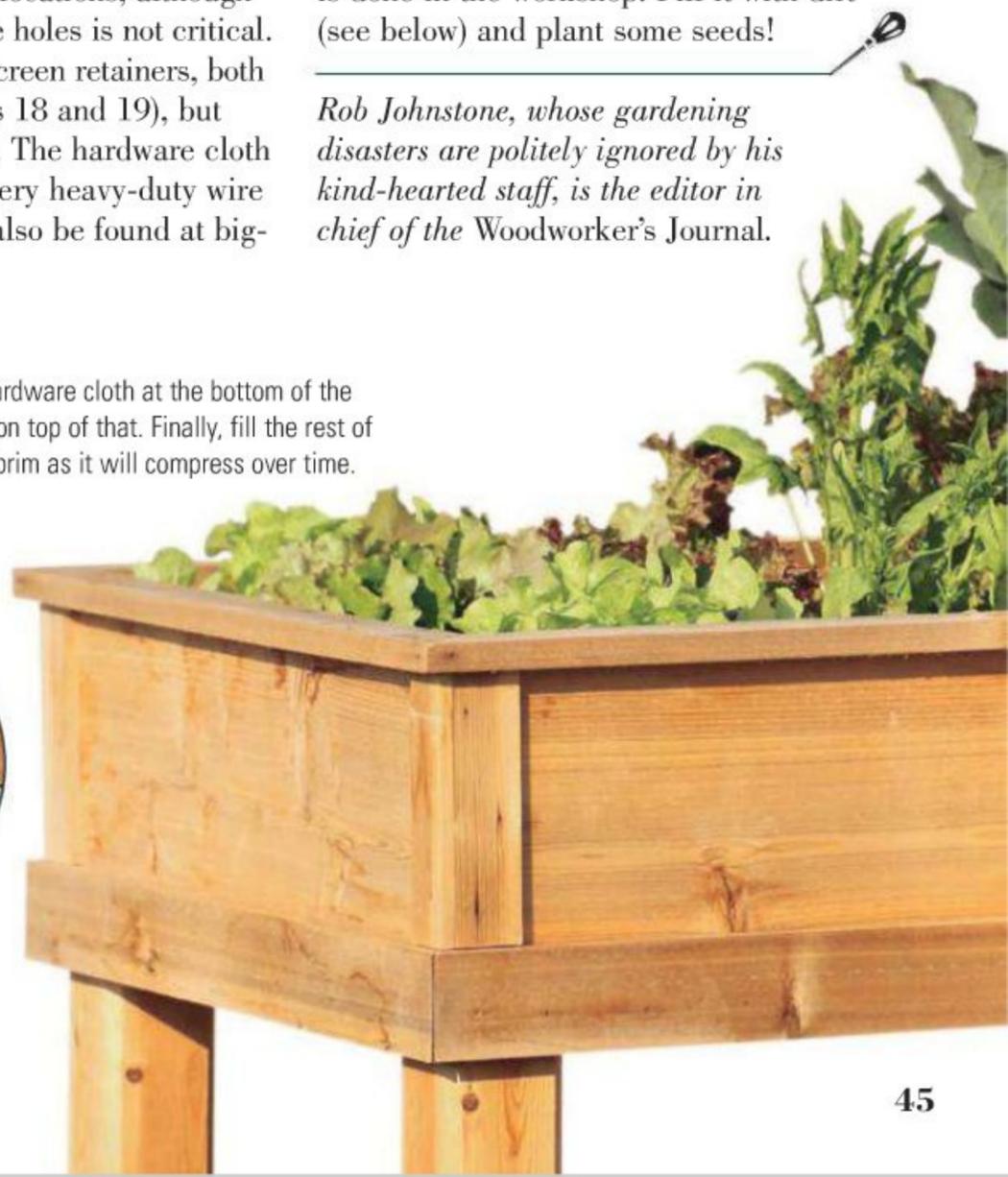
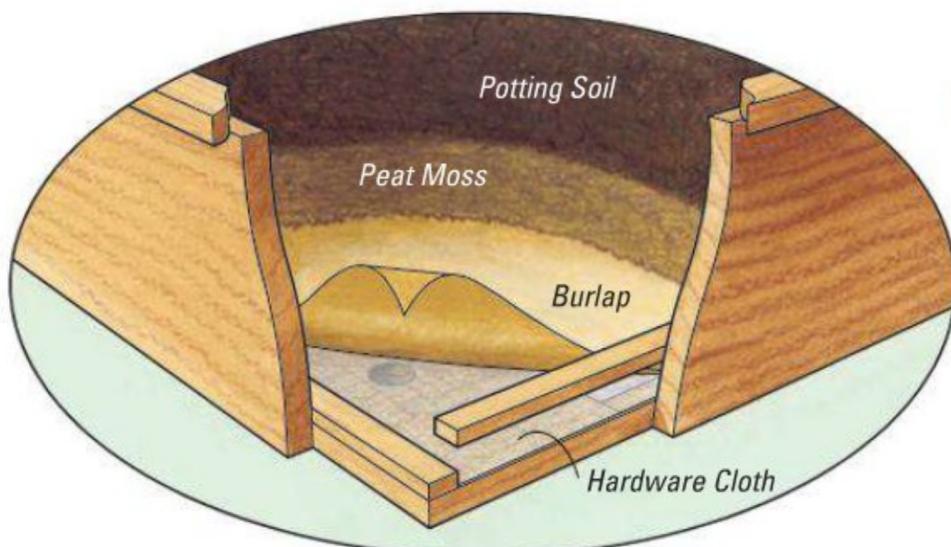
While I did sand the smooth faces of the cart and broke the sharp edges, I chose not to apply a finish of any kind to the wood. This was not due to laziness (well, at least not completely), but rather due to the fact that cedar weathers the elements well and its hue changes to a nice silver color if left unfinished.

And that is it — the garden patio cart is done in the workshop. Fill it with dirt (see below) and plant some seeds!

*Rob Johnstone, whose gardening disasters are politely ignored by his kind-hearted staff, is the editor in chief of the Woodworker's Journal.*

## Laying Down the Layers

To build up an effective growing medium, start by putting a layer of burlap over the hardware cloth at the bottom of the planting box. Then put a 2-inch layer of peat moss (available at most garden centers) on top of that. Finally, fill the rest of the planting box with potting soil mixed with a bit more peat moss. Fill it right to the brim as it will compress over time.



# Nail Gun Cabinet

By Chris Marshall



*Organize your air nailers and nail supply, too, with this wall-mounted weekend project.*

**N**ail guns have a way of multiplying in my shop. It began with an 18-gauge brad nailer, followed by a finish nailer, pin nailer and crown stapler. If your collection has also grown, you know that more nailers means more nail sizes. Those little blister packs of fasteners ended up scattered, and I found myself buying duplicates instead of just getting better organized. Well, no more. This plywood cabinet will keep everything tidy. My idea started with the black plastic 16-drawer case you see above. I found it at [Randmh.com](http://Randmh.com) (item C10116) for \$13. The

drawers fit full nail clips like they were made for them. Now I know where every size is and when I need to buy more — or when I don't.

Grab some plywood and follow along with me to make one for your shop.

## Making the Sides

Begin the side panels by cutting two 3/4" plywood blanks to size, then lay out and remove the lower "stepped" portion from both using your band saw or jigsaw. See the *Drawing*, next page. Next, cut the top shelf to size, and make an overly long



*Feed your side panels along the rip fence to mill the back panel rabbets. Hold-downs of any sort will help to ensure consistent-depth rabbet cuts.*

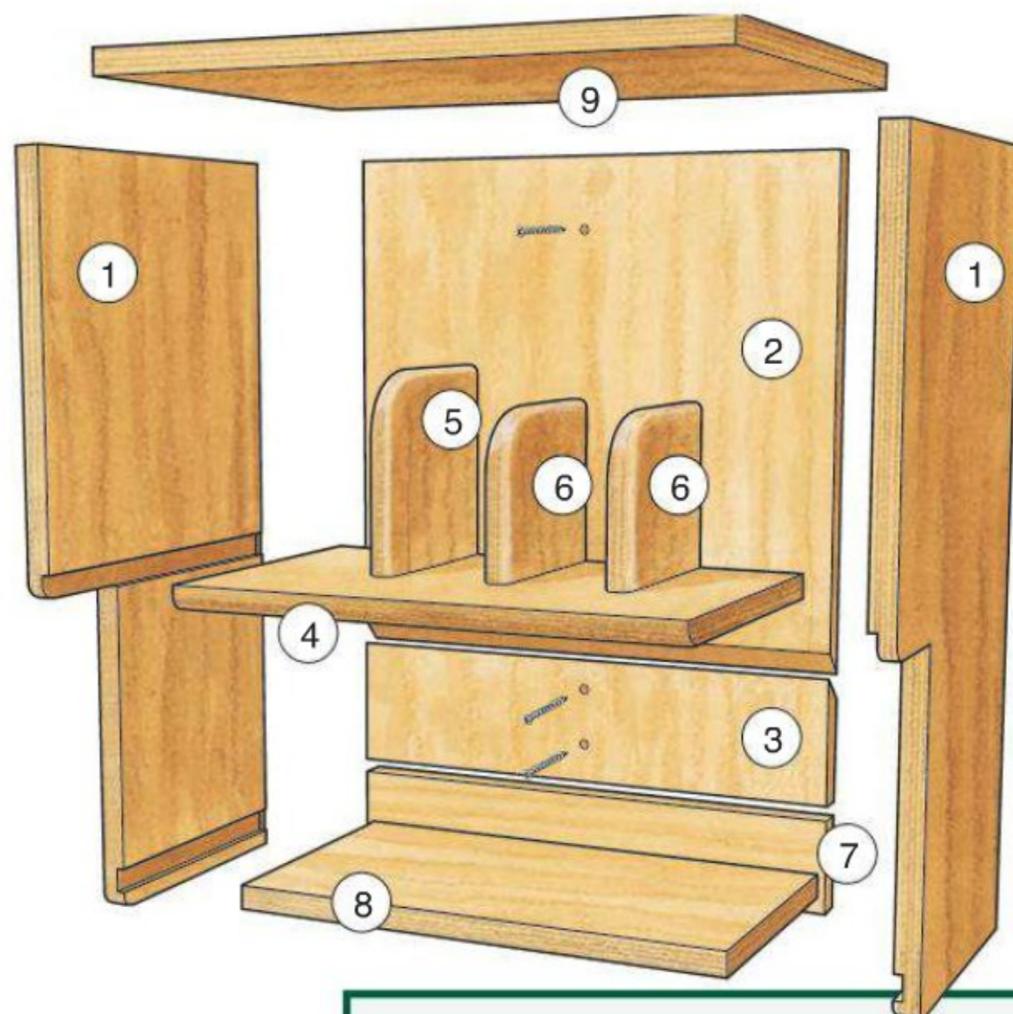
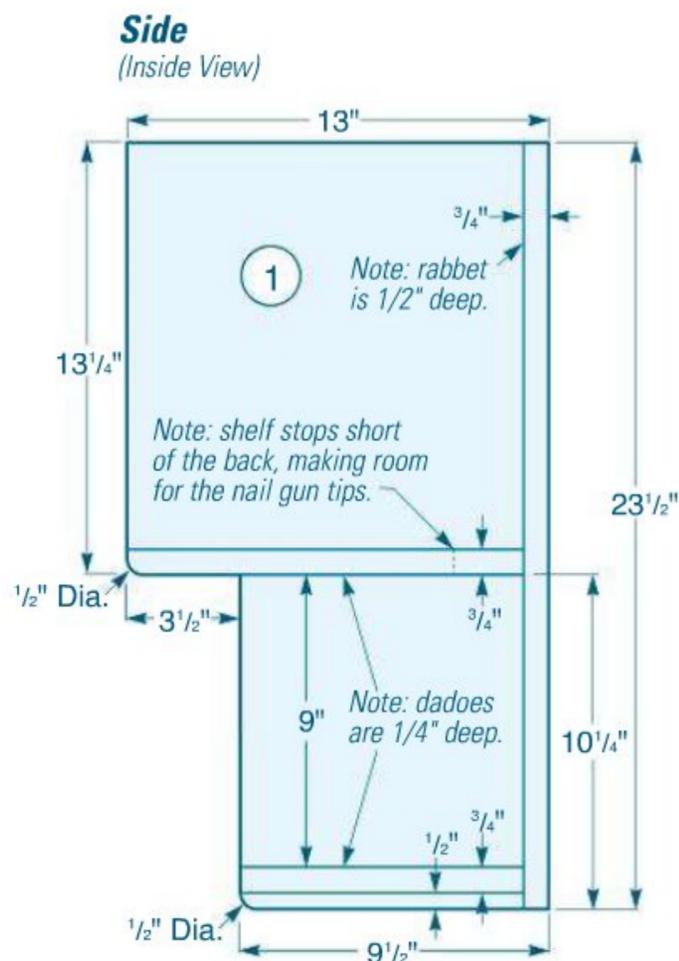


*Clamp the top shelf between the sides, and secure it with glue and 3/4" brads driven into the dadoes from below at a steep angle.*



*Use your nail guns as spacers to position the dividers. Clamp each before securing it to the back panel and shelf with countersunk screws.*

blank for the back panel that measures 16 1/4" x 19 7/8". Tilt the blade on your table saw to 45 degrees and slice off a 5" piece from one end. This beveled offcut forms the French cleat for mounting the cabinet to the wall. Set it aside for now.



## MATERIAL LIST

	T x W x L
1 Sides (2)	3/4" x 13" x 23 1/2"
2 Back (1)	3/4" x 16 1/4" x 14 3/4"
3 French Cleat* (1)	3/4" x 16 1/4" x 5"
4 Top Shelf (1)	3/4" x 10" x 15 3/4"
5 Tall Divider (1)	3/4" x 6" x 6"
6 Short Dividers (2)	3/4" x 6" x 5"
7 Bottom Cleat (1)	3/4" x 3" x 16 1/4"
8 Bottom Shelf (1)	3/4" x 8 3/4" x 15 3/4"
9 Top (1)	3/4" x 14" x 18 3/4"

\* Pieces 2 and 3 are cut from the same blank.

Switch out your standard blade for a dado set, and adjust it carefully so its cutting width matches the thickness of your plywood stock. Raise it a quarter inch above the table. Use your miter gauge outfitted with a long fence to support the side panels as you cut the top and bottom shelf dadoes. Notice that the top shelf dado intersects the stepped edge of the side panels. And remember, the sides are mirror images of each other — not carbon copies. This matters when orienting the panels correctly for dadoing.

With these dadoes done, crank the blade up to 1/2". Clamp a sacrificial facing to your rip fence, then position the fence next to the blade to mill 3/4"-wide rabbets along the back inside edges of the side panels (see top photo, facing page). These will house the back panel.

Before you can assemble your parts, chuck a 1/2"-diameter roundover bit in your router and ease the front bottom edge of the top shelf. Now clamp the shelf into its dadoes in the sides and use the shaped edge as a guide for filing the square corners of the sides to match the shelf. (You'll also notice that the top shelf stops short of the back panel rabbet by 2 1/2" — it's no mistake. That gap makes room for the protruding nailing tips of your guns so they'll rest flat on their magazines on the shelf.) Round over the bottom front corners of the side panels, too.

This is the right time to sand all of the project parts up to 180 grit. Mask off the dadoes and rabbets in the sides before applying finish. It's easier to topcoat flat surfaces now than inside corners later!

## Assembling the Carcass

Avoid making the same mistake I've made before when assembling parts with French cleats: Your back panel's beveled edge should face into the cabinet, not toward the wall. Fasten it into the side panel rabbets with glue and screws to bring these parts together. Then slip the top shelf into its dadoes and attach it with glue and brads.

I made three dividers in sizes to support my guns and make them easy to grab, but the proportions should work for most models. Shape their top corners with a 2" radius and round over the sharp leading edges. Finish the dividers before screwing them to the top shelf and back panel, spaced as needed to fit your guns.

## Wrapping Up

Turn more plywood into the bottom cleat, bottom shelf and cabinet top panels. Finish and install them, locating the bottom cleat flush with the bottoms of the side panels — it creates enough clear space for the French cleat to fit through the cabinet back and up

**The cabinet's French cleat system makes it easy to position and hang from a single wall stud.**

into place. Then find a wall stud to mount the French cleat — bevel edge facing the wall. Rest your cabinet on it. Drive another screw through the back panel in the upper cabinet area and into the stud to lock the project in place. Now load it up for full nailer convenience!

*Chris Marshall is Woodworker's Journal's field editor and a big nail gun fan.*



# What's In Store

## Extreme Tools and Cool Apps

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800-445-0077

Earlex  
888-783-2612

Grizzly  
800-523-4777

Metabo  
800-638-2264

Rockler  
800-279-4441



**A**mana Tool's new *Prestige™ Super-Fine Adjustable Dado Set* for shapers (item 61370) consists of seven laser-cut hardened steel cutters coated in Amana's Electro Blu™ non-stick coating. Designed for use in 3/4" arbor shaper machines, the set accommodates undersized plywood and can be adjusted as needed using the included shim set. Each blade has four tungsten carbide tips for producing smooth edges and flat-bottom cuts both along and across the grain. Amana technical director Frank Misiti says the set can help woodworkers "more easily and safely create deeper tenons and other joints." The set is priced at \$188.95.

*Amana Tool's new Prestige™ Super-Fine Adjustable Dado Set*

Glue no longer stays stuck to your brush with the new *Silicone Glue Brush* (item 45624) from **Rockler**: after you've let it dry, it peels and flakes right off the flexible silicone bristles. You don't need to throw the brush away but, instead, can reuse it for another glue-up, and it doesn't shed bristles into your glue-ups. The whole brush is waterproof, so you can also immerse it in water for cleaning off wet glue. One end of the 1"-wide brush features 1/2" deep silicone bristles; the other end is shaped into a tapered paddle for detailed applications like mortise-and-tenon or dovetail joinery. According to Steve Krohmer, Rockler's vice president of product development, "This is the last glue brush you'll need to buy." It works with standard wood glues and with polyurethane glue, and is priced at \$3.99.

**Grizzly** has come out with the new *Model G0514XF 19" Extreme Series Bandsaw with Foot Brake*. What makes this 19" band saw extreme? It could be the 18 1/4" of cutting capacity left of the blade, the 12" maximum cutting height or the extra-large (26 3/4"

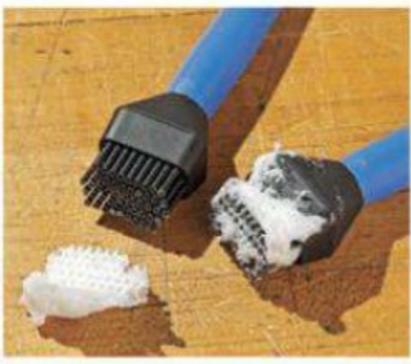
long) tilting table. There's a patent pending on the extruded aluminum resaw fence, and double-row ball



*Grizzly Model G0514XF 19" Extreme Series Bandsaw with Foot Brake*

bearing blade guides send your wood through the saw for cuts with a 3hp motor. Additional features on the G0514XF include two 4" dust ports, a tracking window and a quick-release blade tension device. It's priced at \$1,325.

*Rockler Silicone Glue Brush*





Earlex HG1200 and HG1500 Heat Guns

With *heat guns*, you can age or dry wood, remove paint and varnish, etc. — and **Earlex** has added the *HG1200 and HG1500* to their line. Both weigh in at 2.2 pounds and operate on 120 volts. The HG1200 utilizes 1,200 watts at two heat settings (626° F and 950° F), while the HG1500 utilizes 1,500 watts at heat settings of 660° F and 1,110° F. Included with the HG1200 are a concentrator nozzle and glass protection nozzle, while the HG1500 comes with four nozzles, three shave hook blades, a shave hook handle and a general purpose scraper. Suggested prices are \$24.99 for the HG1200 and \$39.99 for the HG1500.

**Metabo's** new *STA 18 LTX Cordless Jig Saw* can cut a maximum wood thickness of 5 $\frac{5}{16}$ " (and both nonferrous and sheet metals). The rubber-coated handle is designed for user comfort, and an adjustable blower allows for a debris-free view of the cutting line. An anti-splinter insert helps prevent chipping when you're sawing brittle materials. The STA 18 LTX has a tool-less blade change system and a four-stage



Metabo STA 18 LTX Cordless Jig Saw

adjustable orbital blade stroke. Positive bevel stops are at 15°, 30° and 45°. Variable speeds go up to 2,700 strokes per minute, and the 18-volt

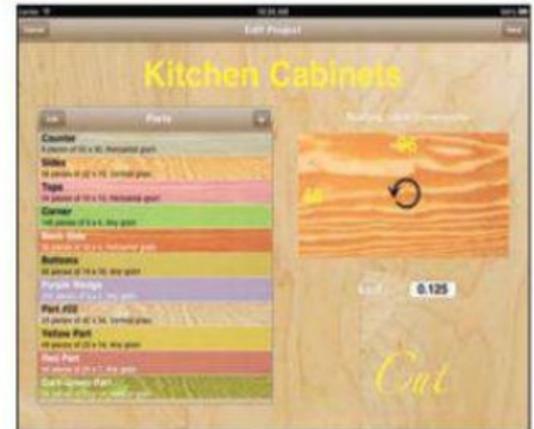
tool accepts batteries from Metabo's lithium-ion line. It's priced at \$149.

The *I•Semble™ Shelf Blocks* from **Rockler** are designed to be just as easy to use in constructing do-it-yourself furniture as the traditional milk crates of a college student — but they're sturdier and more attractive. Made of steel with black powder-coat finish and a classic cross design within their bracketed shape, the *I•Semble Shelf Blocks* can support shelving spans of up to 36" of standard 3/4" lumber. No joinery skills are required to put this system to work, and screws are provided with each pair of the blocks. They're sold in pairs for \$19.99.

The *Carpenter Pro app* for the iPad and iPhone devices can calculate how many plywood sheets to cut for your project and give you detailed cutting diagrams — including, as is often an important consideration, taking into account the grain direction for each piece. (A "don't care" option makes calculations on the basis of minimizing scrap.) You can zoom in and out of the cutlist graphs, name each part, and print your cutlist results or export them as a PDF. The *Carpenter Pro* app has an iTunes store price of \$14.99.



**NOTE:** See Quik-Link at [woodworkersjournal.com](http://woodworkersjournal.com) for web links to all of these products.



Carpenter Pro app



Rockler *I•Semble™ Shelf Blocks*



# Tool Preview

## Festool's Domino XL: A New Game Changer



### Slot Mortising:

The idea of a powered slot mortiser has been around since before electric tools.

Water mills actually powered belt-driven models starting in the middle 1800s.

*The new Domino XL is a larger followup to Festool's original handheld slot cutter. Like its smaller brother, this tool is a game changer.*

Last summer, I spent time assisting master woodworker Ian Kirby as he built the projects for our DVD series. We used Festool's Domino joinery on most of the projects, and Ian simply could not say enough good things about the Domino system. He identified the Domino as a real "game changer" in terms of small shop woodworking: adding speed and efficiency to mortise-and-tenon

construction. His only mild complaint was that he wished that there was a larger Domino option — one that correlated closer to traditional slot mortisers. Well, perhaps the folks at Festool were listening to Ian, because that's exactly how you can describe their new Domino XL.

Why are Domino machines such game changers, as Ian opines? The answer is both obvious and subtle. First off, Dominos cut mortises with

dead-on accuracy in a fraction of the time of other methods. (Saving time means money to the pros, and significantly improved productivity for us hobbyists.) That's the obvious part. The subtle part is the quality of the wooden Dominos — the provided loose tenons. As you may know, slot mortising has been around a long time, whether it was made by a stationary machine or a handheld tool, like a router (see "Skill Builder," page 60). But once your mortise is cut,



Smallest original Domino



Standard #10 biscuit

**Shown in relative scale, the large size of the new Dominos designed for the XL becomes readily apparent.**

**When shown side by side, the increased height of the Domino XL (top) is evident compared to the Domino DF 500. The difference in the size of slots they cut is even more impressive. You can find them at rockler.com.**

the next step is to make loose tenons, with shaped edges matching the opening.

Festool provides pre-shaped high quality compressed beech loose tenons, which they call Dominos. They not only speed up the process by removing a step, but because they fit the mortises perfectly when compressed, and then swell from the glue, the joints are stronger than standard shop-made loose tenons (which have proven to be plenty strong). That means a properly designed stile and rail joint using a Domino will be exceptionally strong.

By increasing the size of the Dominos that can be used, the new XL opens up a host of

projects that the smaller Domino would have struggled to support. Chairs, benches and large tables will benefit from the new larger sized Dominos. Passage doors and other large-sized frame and panel constructions are likewise right up its alley.

But all this does come at a cost. The new Domino XL is being introduced at \$1,200 — more than the cost of many stationary tools. And a package of the large Dominos shown on the opposite page costs about \$50 for 70 pieces. But because it accurately makes mortise-and-tenon joints (the workhorse of solid wood joinery) so much faster, while keeping them extremely strong,



**The XL at a glance ...**

Domino XL DF 700 .....	\$1,200
Watts .....	720
Weight .....	11.5 lbs
Projected Sale Date ....	6/1/2012

[www.festoolusa.com](http://www.festoolusa.com)

this tool has to be considered valuable. Whether it will end up changing your game is a call that's up to you.

[www.woodworkersjournal.com](http://www.woodworkersjournal.com)  
**MORE ON THE WEB**

To watch a video of the author demonstrating both Festool Domino tools, visit [woodworkersjournal.com](http://woodworkersjournal.com) and click on the "More on the Web" tab shown above.



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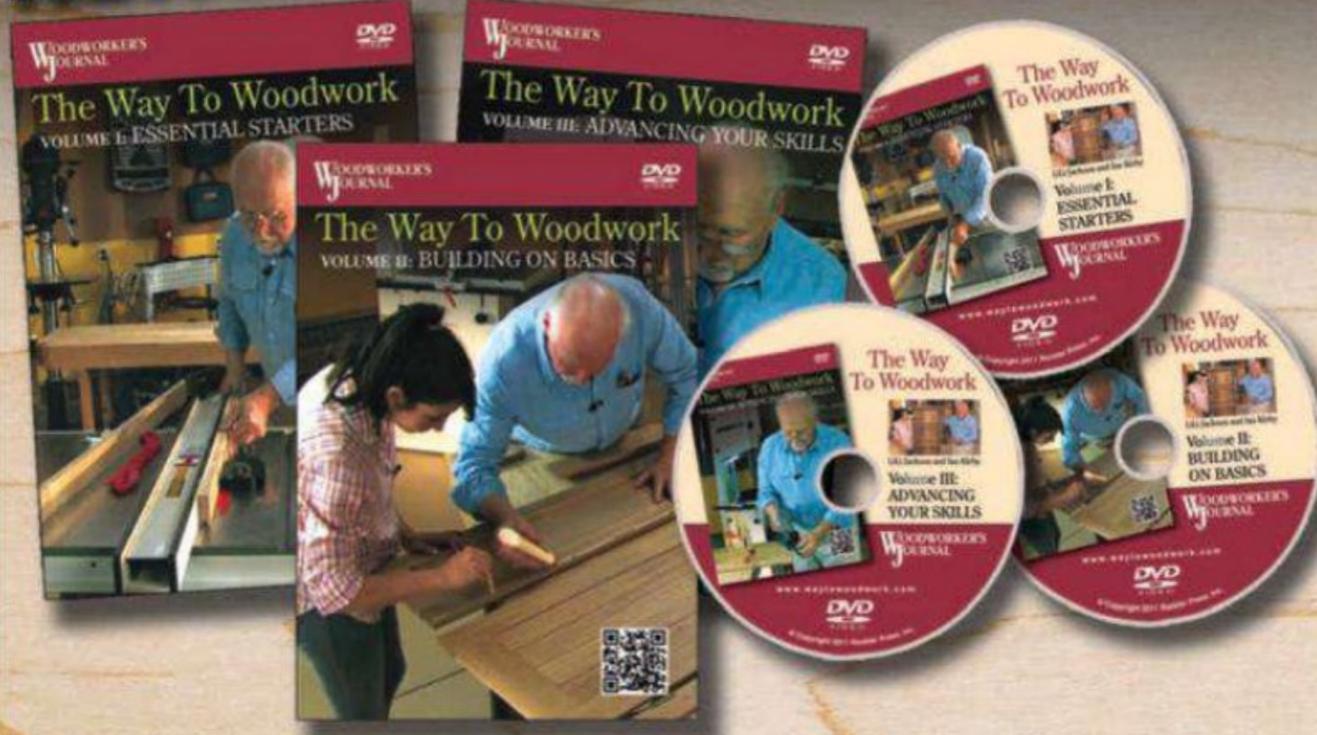
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# Today's Shop

## Honing Guides: Pros and Cons

By Sandor Nagyszalanczy

*If your freehand sharpening skills leave something to be desired, a honing guide can help you put razor-sharp edges on all your chisels and plane irons.*

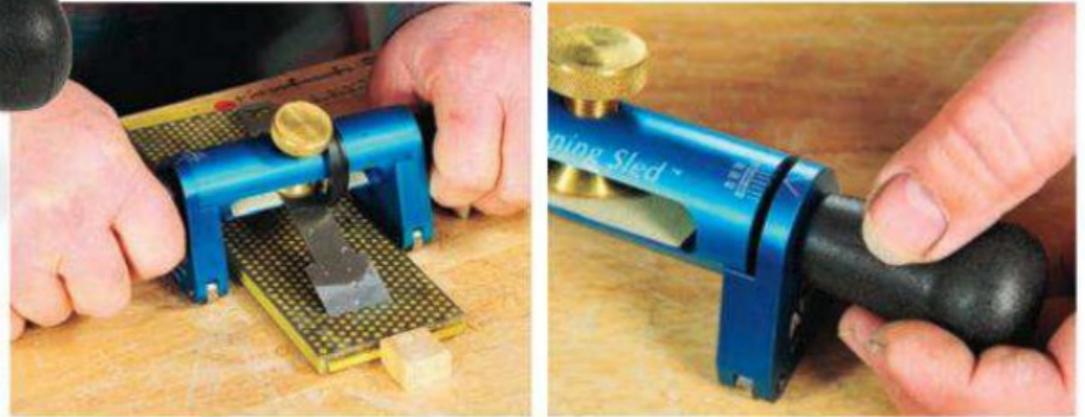
**A**h, what a feeling: After running power tools all morning, you switch off that noisy router or table saw and settle back to make some sweet-smelling shavings the “old-fashioned” way, with a chisel, spokeshave or hand plane. But all those good feelings can evaporate in a flash if your edge tools prove too dull to cut even a tender steak. Working with blunt-edged tools that tear wood fibers instead of cutting them isn't just frustrating, it's unsafe: It takes more force to drive the tool, so it's more likely to slip and cause an accidental cut.

Traditionally, honing dull tools means it's time to get out the oilstones and employ elbow grease mixed with a good dose of skill to bring edges back up to arm-hair-

shearing sharpness. While careful freehand sharpening can produce excellent results, unpracticed techniques typically yield inconsistent results and tools that aren't as sharp as they could be.

An attractive alternative to working freehand is using a honing guide, which can help you attain a wickedly sharp edge without hours and hours of practice. In this article, I'll give you a driver's seat view of nine different honing guides and systems that range in price from less than \$20 to nearly \$200. All of these guides are designed to sharpen typical thin, straight-edged tools, like plane irons and chisel blades. Some also handle tools with tapered shanks, like dovetail chisels; short blades, like spokeshave irons; and/or thick-shanked tools. Depending on the style of the guide, honing is done using either a standard whetstone (oil or water), diamond plate, or a honing plate with an abrasive film.





**Spring-loaded front wheels on the Alisam (left) let you press the tool down during honing. A series of tiny detents (right) set the exact honing angle. Tightening the side handle locks the setting in place.**

## Alisam Sharpening Sled #SS1

Anodized a brilliant blue, Alisam's #SS1 is a wheeled sharpening guide that's designed and used differently than other wheeled guides. This guide has a cylindrical body with a central slot through which the blade is inserted. A plastic flanged ring around the outside of the cylinder helps square the blade, while a large-diameter brass screw with a knurled knob locks it in place. The screw has a large foot to put more even pressure against the blade, and there's a piece of abrasive paper on the bottom of the slot to keep the blade from slipping out of position. The #SS1's body is straddled by two side supports, each with a pair of wheels on its lower edge. The supports attach to the body via threaded studs on a pair of large plastic knobs that serve as handles. To set the bevel angle, you loosen the handles and select one of 7 detent settings between 15 and 45 degrees. In use, the Alisam guide straddles the bench stone or rides atop a honing plate, working with a back-and-forth action. The sealed roller-bearing wheels at the front of the guide are spring-loaded, allowing the

blade to be pressed down onto the stone with just the right amount of pressure during honing.

**PROS:** Large clamping screw and abrasive pad hold tools very securely. Guide's handles give the user a good grip, so you can apply ample pressure while maintaining excellent control.

**CONS:** Can't use the #SS1 with wide bench stones and, unless the stone/plate is narrow, you can't use the full surface of the stone (Alisam also makes the wider #SS3). If subsequent stones vary in thickness, you need to readjust the projection of the blade each time. Only a limited number of honing angle settings are possible.

## General 809 Guide

This inexpensive guide is made mostly from cast plastic. There's a pressed sheet metal clamping head which secures the blade to be sharpened with a large plastic knob. Another knob at the guide's midsection sets the angle of the jig and hence, the angle of the blade relative to the sharpening medium. Two plastic rollers at the back end of the 809 guide are made to roll on either a sharpening plate (glass, granite, etc.) and keep

the blade at a constant angle during sharpening or honing.

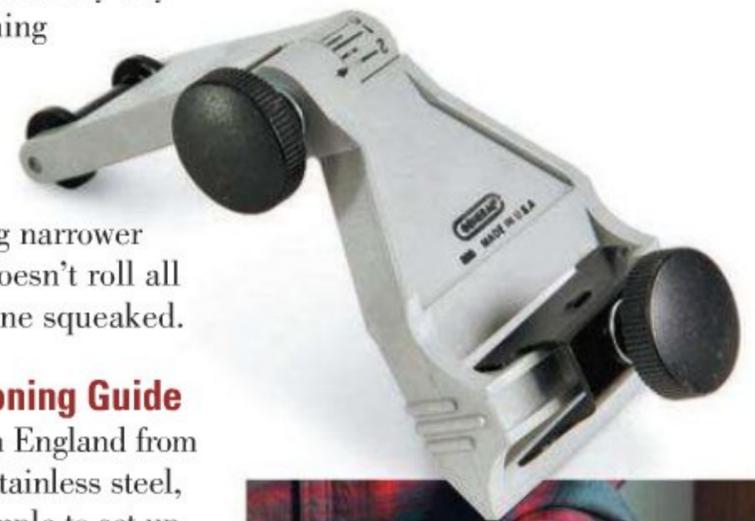
**PROS:** Inexpensive to buy and works with virtually any stone or sharpening plate.

**CONS:** Guide doesn't offer much stability when sharpening narrower blades. Roller doesn't roll all that well and mine squeaked.

## The Kell #2 Honing Guide

Precisely built in England from solid brass and stainless steel, the Kell jig is simple to set up and use. It clamps a plane or chisel blade between two wheels made of Ertalyte TX (a low-friction, wear-resistant plastic) that roll along the top of a stone or plate during honing. A pair of clear plastic washers on the clamping faces cushion the tool and prevent it from slipping out of position. The amount that the blade projects from the jig determines the honing angle. Kell's #2 guide accepts blades up to 2 3/8" wide (their smaller #1 guide handles blades up to 1 in. wide).

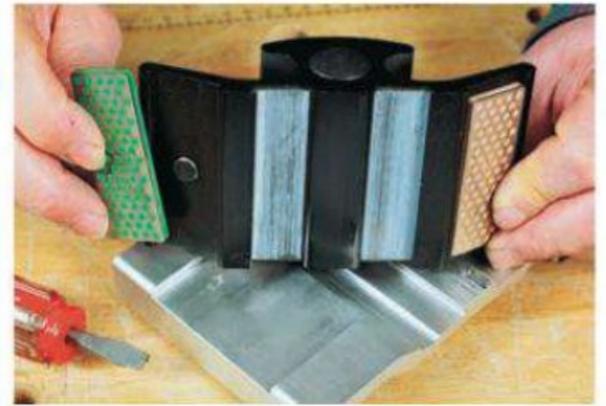
**PROS:** Because of the jig's low center of gravity, it's



**The knob in the center of the General 809 honing guide is used to set the blade to the desired honing angle.**

**The Kell #2 honing guide's side-gripping design allows it to hold even short chisels and plane irons very solidly.**





To use M-Power's Precision Sharpening System (PSS) guide, you hold the tool stationary while you slide the guide's head back and forth, as shown at left. Small diamond hones are held into the M-Power's head with powerful magnets (right).

especially good for honing short blades as well as thick tools, like mortise chisels. **CONS:** When honing wide plane blades (2½" or so), the guide's wheels end up so far apart that the guide only works on honing plates or very wide bench stones. Won't work with tapered-shank tools, skew chisels or irons with angled edges.

### M-Power PSS

This unique honing guide has an aluminum base with dovetailed ways that engage a weighted sled that slides side-to-side during honing. The sled is two-sided: One side is used to create a 25-degree primary bevel, then it's reversed on the ways to finish a blade with a 30-degree secondary bevel. A strong button magnet on each side holds an interchangeable diamond-grit insert. The Precision Sharpening System (PSS) comes with two DMT-made inserts: coarse and fine. A channel machined in the base keeps the blade square to the sled. You hold the tool against the side of the channel while you slide the

sled back and forth to hone the blade's edge.

**PROS:** System comes complete with diamond hones; no need to buy separate stones or accessories. Diamond hones cut quickly, and the side-to-side honing action subjectively creates a cleaner cutting edge than with front-to-back guides (see the conclusion section). **CONS:** It takes some time to get used to holding the tool while moving the guide's sliding head back and forth. Only two honing angles are available (although they're the two most commonly used angles). You can't use the PSS on tools with tapered shanks or angled edges. Only a narrow band of each stone is used, so they wear more quickly. You'll still need to buy a separate set of stones/plates for flattening tool backs.

### Pinnacle Honing Guide

This complete system uses a pair of rails to guide the back-and-forth motion of a sliding sled that holds the blade at a fixed angle. A pair of knurled thumbscrews secure a blade into the sled, and a pair of adjustable fences help square it up. A small pair of thumbscrews on the sides of the sled set primary honing angles between 15 and 45 degrees in 5-degree increments or set secondary angles 2 degrees greater than each primary setting. Cross members between the

Pinnacle's rails secure a bench stone or honing plate at a fixed distance below the sled.

Another pair of cross members limit the travel of the sled along the rails. The sled can also be used without the rails to sharpen atop a glass or granite plate fitted with abrasive films. The standard Pinnacle guide comes with 14"-long rails, enough to accommodate stones or honing plates up to 3" wide and 11½" long; optional 20"-long rails let you use longer stones and honing plates.

**PROS:** Complete sharpening kit comes ready to go, with honing plate and abrasive films. Easy to add a secondary bevel to the tool without reclamping it. **CONS:** Thumbscrews sometimes allowed tools to slip out of position, and they don't properly secure chisels with rounded or un-flat tops (e.g., dovetail chisels).

Only a narrow band of the stone/honing plate is used, unless the stone/plate is repositioned or the tool is shifted in the sled. Changing stones or honing films on plates is time-consuming. Rails prevent using the mounted stone/plate to flatten the back of the tool.

### Sharp Skate III

Instead of honing with a front-to-back action like other guides (save the M-Power PSS), the anodized aluminum Sharp Skate III uses hardened wheels that move the guide



With the blade locked in place (top), you move the Pinnacle guide's carriage back and forth over the whetstone during honing. Small thumbscrews (below) on the side of the carriage let you set both primary and secondary honing angles.

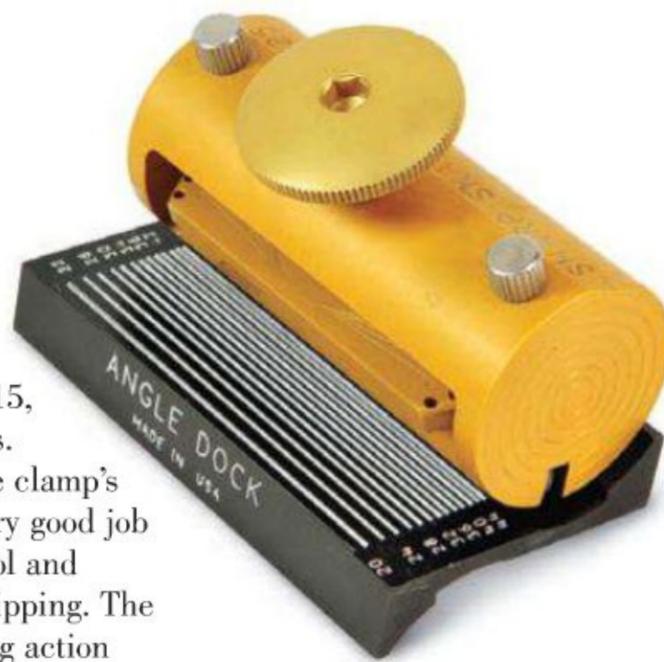


with a side-to-side honing motion. This guide has a unique blade clamp featuring a large knurled-edged hand screw and a concave V-shaped top jaw. A series of stepped serrations in the jaw help square the blade in the guide and keep it from shifting sideways during honing. The Sharp Skate III comes with a two-sided aluminum angle dock used for setting the honing angle. The dual-sided dock has a series of lines incised at all whole angles between 20 and 45 degrees. With the guide set into the angle dock, you extend or retract the blade until its edge lines up with the desired angle line. The Sharp Skate also handles skewed blades: The clamping plate rotates to any angle between 0 and 45

degrees in either direction, with fixed settings for 15, 20 and 25 degrees. **PROS:** The blade clamp's serrations do a very good job of squaring the tool and keeping it from slipping. The side-to-side honing action subjectively creates a sharper cutting edge than with front-to-back guides. **CONS:** The most expensive guide in the group. Angle dock won't work with thick chisels or low-angle plane irons. The concave-V-shaped jaw won't hold some narrow and thin tools.

#### Side-Clamping Guide

This style of guide is based on the venerable English "Eclipse" guide. It uses a single threaded screw to



Unlike other wheeled guides that roll back-to-front, the Sharp Skate III hones with side-to-side action.



The angle dock that comes with the Sharp Skate III is used to set the blade to be honed at a precise angle.

operate the clamping jaws that grip the edges of the cutting tool and keep it square to a single roller, which guides the tool back and forth over the honing media. The guide offers two different tool clamping positions: A pair of raised lips atop the guide hold plane blades or chisels up to 3" wide; a lower V-groove holds thin tools from very narrow up to about 1 3/4" wide.

**PROS:** The guide is very

*Today's Shop continues on page 58 ...*

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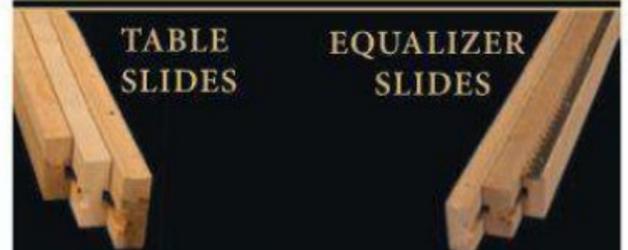
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# Today's Shop continued



*Grooves in the side-clamping honing guide are capable of holding even very short blades and narrow chisels.*

inexpensive and holds a wide variety of tools, including very short palm plane irons and spokeshave

blades. Works even atop narrow and short stones and plates. The guide's 7/16"-wide roller allows you to hone both straight cutting edges or, by tipping the guide a bit, slightly curved edges as well (like the violin planes shown in the photo at left).

**CONS:** Narrow wheel doesn't offer much stability to keep narrow blades flat on the stone. Guide won't hold some low-angle block plane irons; tapered edge tools like fishtail chisels; or thick tools, such as mortise chisels. Guide's roller tends to foul with honing grit

if not kept clean and well lubricated. The jaws often loosen unless the clamping screw is torqued down heavily.

## Veritas Precision Sharpening System

The less expensive of two guides offered by Canada-based Lee Valley Tools — the Veritas Precision Sharpening System — consists of two components: a honing guide and an angle-setting jig. To use the system, you first set the angle jig's head to the desired bevel setting: 15, 20, 25, 30 or 35 degrees. Then you slide the honing guide onto the blade and tighten its heavy-duty brass screw to clamp a blade in place (taking care to keep it square to the guide's roller). The guide rolls

atop any sharpening stone or using a back-and-forth honing action. Once the primary bevel is done, turning a knurled brass knob resets the guide's eccentric roller to a slightly elevated angle for honing a secondary bevel (aka "micro bevel" — a very useful sharpening technique).

**PROS:** The angle setting jig accurately sets blade angles with little fuss. The eccentric roller makes it easy to create a secondary bevel without reclamping the tool.

**CONS:** Narrow chisels or irons can come out of square, especially if the top surface of the tool isn't entirely flat. Accidentally mis-setting the eccentric roller can inadvertently create the wrong honing angle.

## Honing Guide Chart

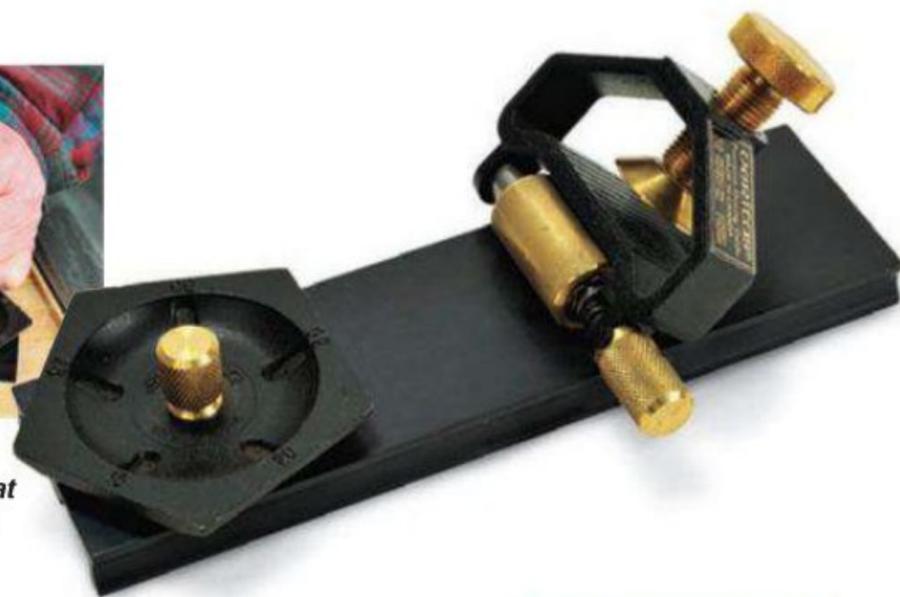
Honing Guide	Guide Type	Street Price	Maximum Capacity	Honing Angle Settings (degrees)	Skewed Blade Honing Possible?	Useable Stones and Honing Places	Optional Accessories
Alisam SS1	Back-and-forth on-stone roller	\$70	2 5/8" wide	15, 20, 25, 30, 35, 40, 45	Yes	Bench stones or honing plates up to 3" wide and 1" thick	Side plates that allow use of thicker bench stones
General 809	Back-and-forth off-stone roller	\$21	2 5/16" wide	None	Yes	Works with just about any bench stone or honing plate	None
Kell Jig	Back-and-forth on-stone roller	\$85	2 5/8" wide *	None	No	Works with just about any bench stone or honing plate	Kell also offers a brass bevel checking gauge
M Power PPS	Side-to-side sliding guide	\$100	2 1/2" wide	25, 30	Yes	Uses special DMT diamond hones (system includes preparation and finishing hones)	Extra coarse, fine and super-fine diamond hones
Pinnacle Honing System	Back-and-forth sliding carriage w/ railed guide	\$115	3" wide	15, 17, 20, 22, 25, 27, 30, 32, 35, 37, 40, 42	Yes (with user-made angle block)	Bench stones or honing plates up to 4" wide, 12" long **	20" guide rails, honing plates and abrasive films, bevel-angle checking gauge
Sharp Skate III	Side-to-side on-stone roller	\$170	3" wide	All whole angles between 20 and 45 (using the included angle-setting jig)	Yes; stops for 15, 20, 25 degrees	Larger bench stones and honing plates	None
Side-clamping honing guide ***	Back-and-forth on-stone roller	\$14	3" wide (top jaws); X wide (bottom jaws)	None	No	Larger bench stones and honing plates	Guide can be purchased with either coarse or fine glass-plate sharpening systems
Veritas Precision Honing Guide	Back-and-forth on-stone roller	\$47	2 5/8" wide	15, 20, 25, 30, 35 (using the included angle-setting jig) ****	Yes	Larger bench stones and honing plates	None
Veritas MkII Honing Guide	Back-and-forth on-stone roller	\$65	2 5/8" wide	13, 15, 17, 20, 25, 30, 35, 40, 45, 50, 54 (using the included angle-setting jig) ****	Yes, with optional accessory	Larger bench stones and honing plates	Skew registration jig, camber roller assembly, small blade holder

\* A 1"-capacity version is also available.

\*\* Up to 18" long when jig is fitted with optional 20" rails.

\*\*\* This guide, based on the older English "Eclipse," is offered under various brand names.

\*\*\*\* Multiple micro-bevel angles are obtainable by resetting the guide's eccentric roller.



A knurled wheel on the Veritas Precision honing guide (left) resets its eccentric roller to a higher angle for honing a secondary bevel. An angle-setting jig (right) that comes with the Veritas guide is used to set the blade at 15, 20, 25, 30 or 35 degrees.

## Veritas MkII System

The larger and more sophisticated of the Veritas guides, the MkII is a roller-style guide with a clamping bar that accepts blades up to 2 7/8" wide. Its most significant feature is a registration jig that temporarily mounts to the front of the blade carrier and accurately squares and aligns the blade or chisel to be sharpened and sets the blade's exact honing angle. A combination of screw stops on the registration jig, as well as three different user-settable positions for the blade carrier assembly, allow a blade to be set at just about any standard honing angle between 15 and 54 degrees. You can also fine-tune the angle setting (typically, to create a secondary bevel; see the Veritas guide, above) by adjusting the MkII's eccentric roller.

To expand its usefulness, the MkII system has a few optional accessories: a special registration jig for accurately clamping skewed blades and chisels (see photo, lower right; it's a camber roller assembly for creating rounded corners on large plane blades — so they don't dig in when rough planing stock); and a small-blade holder for sharpening short blades found in palm planes, spokeshaves, etc.

**PROS:** Very solid guide with good heft. A very complete sharpening system that handles a wide range of tools. Easy to add a secondary bevel to a tool without reclamping.

**CONS:** Setting up the guide takes a bit of time. Unless the two locking screws are

carefully tightened to apply even pressure, the tool tends to slip out of square. Accidentally mis-setting the eccentric roller can inadvertently change the honing angle.

## Picking Favorites

If you've skipped ahead to this section to find out which honing guide is the best one, I may disappoint you. These nine guides are so very different from one another in both how they're used and the range of tools that they'll handle, that I don't think any one could satisfy all possible uses and users. However, over the course of using the guides to sharpen just about every edge tool I own, I did develop some favorites and have a few recommendations:

As an overall favorite performer, I'd have to choose the Veritas MkII guide. Its clever registration jig and adjustable roller made it a slam-dunk to dial in exact honing angles with great precision and repeatability. This is important, because if you set a blade just 1/2 to 1 degree off in a guide, you'll end up grinding more material off the bevel than necessary. With its optional accessories, the MkII will sharpen just about any edge tool in the free world.

Once I got used to its side-to-side honing action, I really liked the Sharp Skate III and the absolutely scary sharp edges it put on my chisels and plane irons (it didn't form the kind of wire edge burr that back-to-front guides seem to create). Hence, I liked it best for honing the precise

secondary bevel that forms the final cutting edges on a tool, and not so much for shaping and restoring its primary bevel.

I liked the Alisam guide best for restoring nicked or otherwise damaged edges. The #SSI's rock-steady clamping and large handles allow you to apply ample honing pressure and remove material quickly. Using a coarse or extra-coarse diamond plate or stone, it's easy to form a new primary bevel on a tool without the risk of overheating the edge (something all too possible when power grinding).

The Kell #2 jig is simple to set, and it works with a wide range of standard chisels and plane irons. Because of its low center of gravity and strong clamping action, I found it very easy to use with consistently favorable results.

If you're on a tight budget, an inexpensive side-clamping guide is probably the best way to go. It handles most basic chisels and plane irons and is handy to have on hand, even if you later decide to purchase a more expensive guide.

*Sandor Nagyszalanczy is a furniture designer/craftsman, writer/photographer and contributing editor to Woodworker's Journal. His books are available at Amazon.com.*



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The Veritas MkII guide (top) has a good heft and rolls very smoothly atop any kind of whetstone or honing plate. The registration jig (bottom) that comes with the MkII can be set to a multitude of honing angles to suit multiple sharpening chores.



## Router Joinery Basics: Loose Tenons

By Bill Hylton

*The mortise-and-tenon joint is the true workhorse of solid wood woodworking. Loose or floating tenons are a remarkably useful variation on the traditional mortise-and-tenon.*

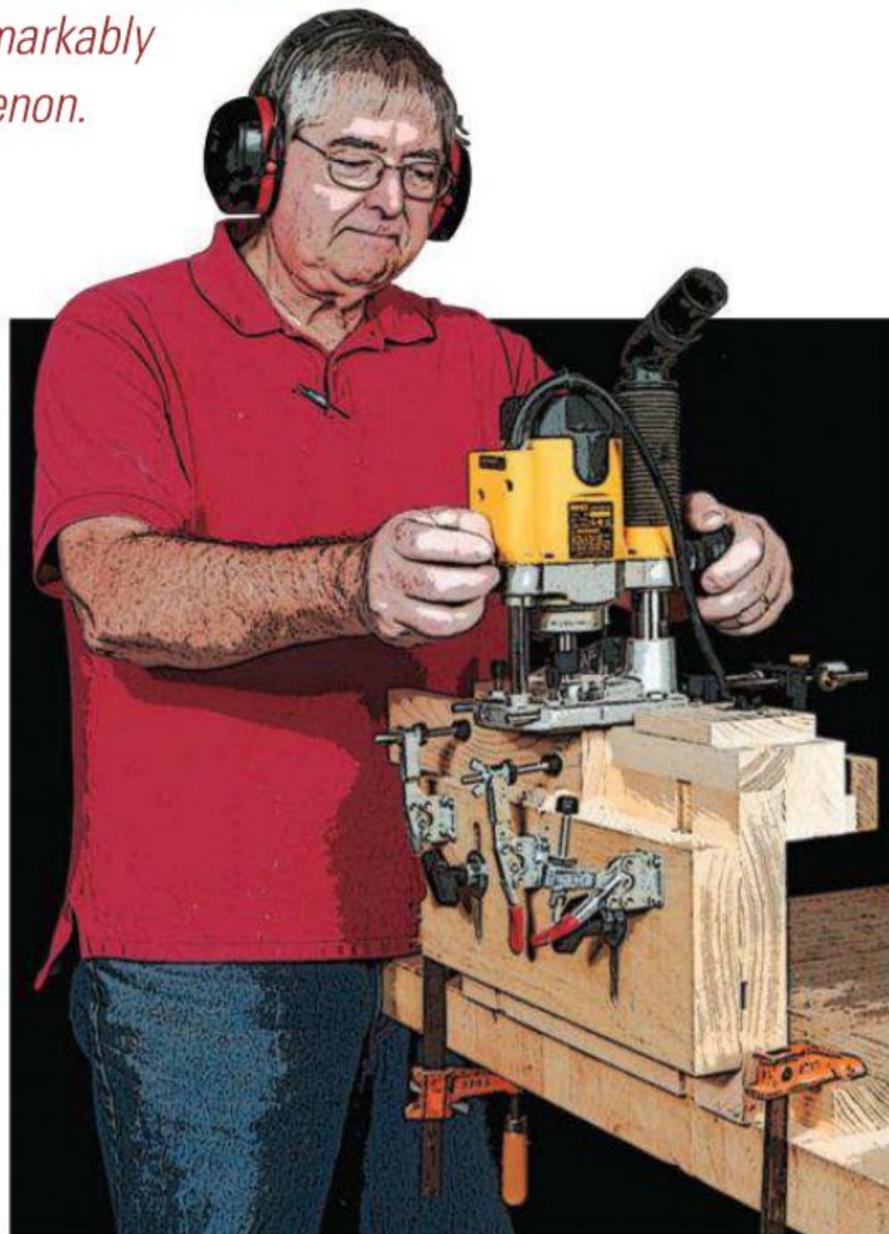
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I may be a power tool kind o' guy, but nevertheless I favor traditional joints, those proven through centuries of use. The mortise-and-tenon is one. It has been used for thousands of years, with examples found in ancient Egyptian furniture.

Woodworkers have come up with many ways of cutting both the mortise and the tenon, ranging from chisels, mallets and handsaws to single-purpose machines costing thousands of dollars. I've used a number of different methods over the years, but the one I come back to again and again is router-oriented.

Instead of cutting a mortise in one piece and a tenon onto the other, I rout identical mortises in both parts to be joined, and I connect them with a fitted strip of wood called a loose tenon. (You may know it as a floating tenon or a slip tenon.)



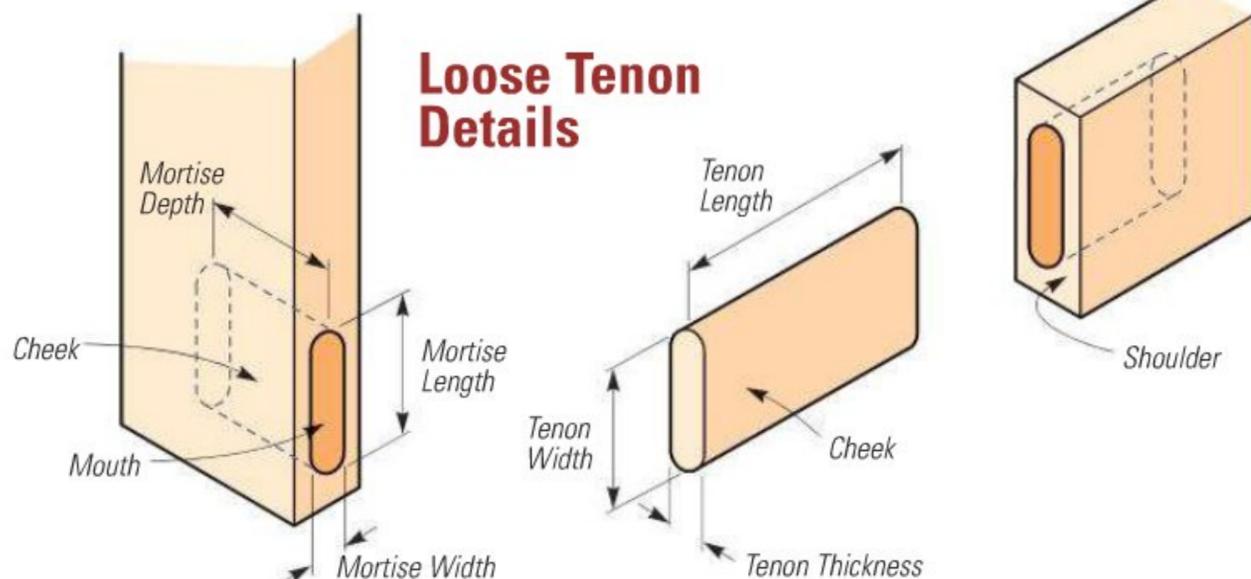
**The author's shop-made mortising jig is perfect for router-cut mortises. Drawings of the jig and information regarding how to make it are available online by clicking on our More on the Web icon.**

Loose tenon joinery is versatile. I've used it to construct tables, a chair or two, post-and-rail casework,

a workbench, cabinet doors, even architectural doors.

Loose tenon joinery is also surprisingly easy. No special-purpose tools are required. A commonplace plunge router equipped with an edge guide and a plunge-cutting straight bit does the heavy cutting. The key is a fixture called a mortising block (or jig), which holds the workpiece and guides and constrains the router's movements. You can build your own mortising block in a weekend.

The piece to be mortised is clamped to the face of the



### Loose Tenon Details



The author's mortising jig, shown on the facing page, only requires you to mark up one piece (left) to set up for cutting both stiles and rails (above).

A typical loose (or floating) tenon, like the one shown above, is made from a long piece of stock which is then shaped and cut to length.

block. The router sits on top of the block with the bit centered over the work. (Interchangeable work-holders — one horizontal for edge mortising, the other vertical for end mortising — simplify orienting and clamping workpieces.) The edge-guide fence slides in a track along the block's back edge, ensuring the router

moves in a straight line. Adjustable stops atop the jig limit the router's travel, thus controlling the length of the mortise.

One setup serves for both edge and end mortises. You switch work-holders to change over from edge to end, and you can do that without impacting the router stops or the edge-guide setting.

The upshot is that the system ensures you get uniformly sized mortises.

Only after all the mortises are cut do you make tenons. You mill strips of stock to just the right thickness, rip it to just the right width, round the edges to perfectly match the mortise ends, and then crosscut them to length.



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# Finishing Thoughts

## Milk Paint . . . The Shabby Chic Look

By Michael Dresdner

*As old as the pyramids and as modern as the “green” environmental movement — milk paint may be an old-is-new finishing option for your woodworking shop.*

**M**ilk paint is thousands of years old, and it’s quite possibly the first paint humans used. It shows up in the pyramids, on cave walls and in the U.S. on painted furniture and walls from our Colonial era.

The basic formula consists of a mixture of milk, lime and earth pigments — three items that were common to any Colonial farm. History suggests itinerant painters of the time brought along their own pigments to mix with local milk and lime. Although other additives have been tried over the years, including drying oils, chalk, calcium carbonate, albumin and hide glue, the basic mixture still works just fine today.

Why should you consider using such old technology in this day and age? Milk paint has a lot going for it, especially in today’s climate of chemically aware consumers. It’s green, in that you mix it by hand, it contains no petrochemicals, it’s made of local, all natural ingredients, and it’s nontoxic, environmentally friendly, biodegradable and contains no VOCs (volatile organic compounds) or HAPs (hazardous air pollutants).

The milk paint you can buy today looks like, and in fact is, the same thing they used back in the old days, yet it’s the ideal product for today’s trendy “shabby chic” look. Sold in powdered form, it has a very long shelf life, since you mix only what you need. It’s easy to apply, and once it goes onto your walls or furniture, it is surprisingly durable. After drying, its sheen is dead flat, but you can top it with boiled linseed oil, water-based polyurethane or oil varnish to add gloss.

The easiest way to buy it is from one of two venerable and very reliable companies: The Old Fashioned Milk Paint Company at [www.milkpaint.com](http://www.milkpaint.com) and The Real Milk Paint Company at [www.realmilkpaint.com](http://www.realmilkpaint.com). Both sell bags of high quality products in powdered form, ready to mix with water, so you don’t even need milk. A bag that makes a pint of paint costs about \$10. Between the two companies, they offer over two dozen colors, and you can, of course, mix two or more colors to make your own custom hue.

You can also buy what is called milk paint in liquid form from companies like General Finishes (you’ll find it at [www.rockler.com](http://www.rockler.com)) but to be honest, it’s really acrylic paint made to match the sheen and colors of milk paint. Since milk paint works best on raw wood, this acrylic alternative may be a good choice for going atop already finished wood.

Just in case you have a yen to make it yourself, here’s a simple 19th century formula (shown at left), courtesy of Dwayne Siever at The Real Milk Paint Company. Get started by stirring enough skim milk into hydrated lime to make a cream. Add the balance of the skim milk. Now add a sufficient amount of limeproof powder pigment to create the desired color and consistency. Stir well for a few minutes before using and during use. Extra paint may be kept for several days in the refrigerator, until the milk sours.

### MILK PAINT RECIPE

1 quart skim milk  
(room temperature)

1 ounce of hydrated  
lime (not quick  
lime) by weight

1 to 2½ pounds of  
chalk may also be  
added as a filler.

Limeproof powder  
pigment as needed

*Milk paint was a common finish in our Colonial era. And it is still useful today!*

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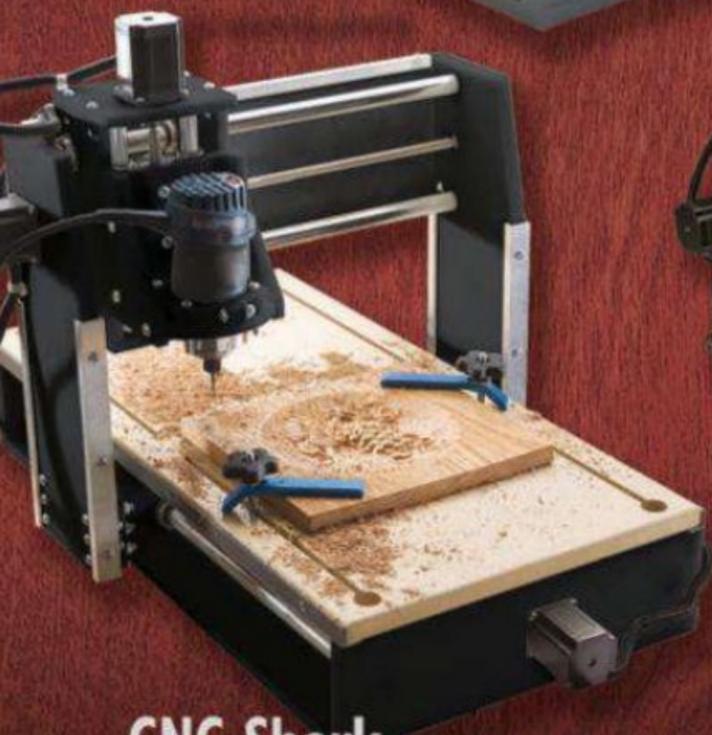
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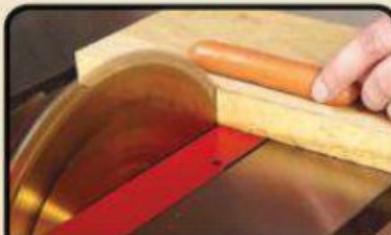
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