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#125 November 2006
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EDITOR'S LETTER

More Time for Woodworking

Here in the northern climate, we're enjoying the fall, but colder weather is on its way. This means we've had to put away the mowers, boats and baseball mitts, pull out the sweaters and tune up the snowblowers. Because I do most of my woodworking during the winter months, it's also time to dust off my equipment and dream about my next project.

The one thing I like about winter is that I can spend more time in my shop. While my wife and children are reading books or visiting friends, I'm happily sawing and chiseling. With its woodstove puffing and the radio playing, the workshop is my winter retreat.

At the top of my project list this year is another tool cabinet. Staying organized is a talent I admire, but not one I was born with. I become so caught up in cutting, drilling, gluing and clamping that soon my shop looks like the local flea market. There's a lot of advice about how to stay organized, but I rank having enough storage space as my number-one method. So every few years I find myself building another tool cabinet. Staying organized has many benefits—mainly it means less time searching for tools and more time using them.

If you're looking for some help organizing your shop, take a look at "Hyperorganize Your Shop," page 44. For a convenient way to keep your tablesaw accessories in order, check out "Tablesaw Storage Cabinet" on page 66. If you find yourself tripping over your collection of clamps, you'll find great help in "7 Classic Ways To Store Clamps," page 56. Looking for something to put in your storage cabinets? Then don't miss our "Best New Products for 2007" article on page 36.

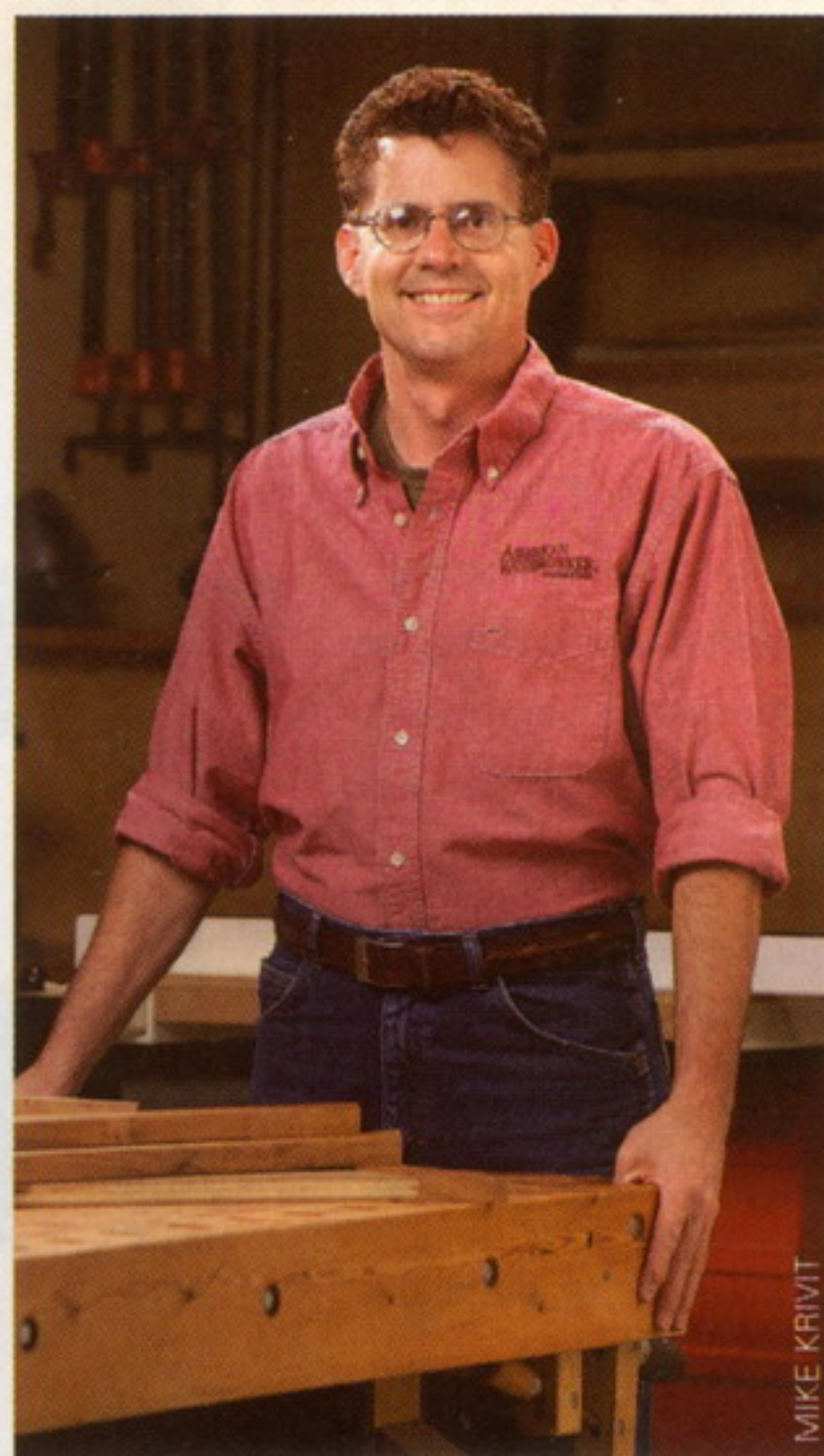
Until next time,

Randy Johnson

Editor

American Woodworker magazine

randy_johnson@rd.com



MIKE KRIVIT

Slice Steel on Your Bandsaw

Q I've heard of a technique called friction-cutting that allows you to cut steel on a woodworking bandsaw. What is friction-cutting and does it really work?

A Friction-cutting is used in industry for cutting iron-base metals, also called ferrous metals, such as steel. You can adopt the technology to your woodworking bandsaw to do limited cutting of ferrous metals in your home shop. Here's how it works: Mount a metal-cutting blade in your bandsaw. The woodcutting bandsaw's high speed—3,000 feet per minute (fpm)—will cause the blade to dull quickly when cutting steel (see photos, below). However, the friction generated by the dull teeth will heat the metal to molten red, allowing the blade to slice through the steel. It's amazing when you first try it. You'll feel some resistance before the metal reaches the molten stage, but once it does, you can cut 1/8-in.-thick steel as though it were 1-in.-thick oak. I tried this in my own shop and had great results in steel 1/8 in. or thinner. Thicker metal diffuses too much heat so the metal doesn't become hot enough to melt.

Friction-cutting on a woodworking bandsaw requires a few precautionary measures. Sparks fly using this method, so be sure to vacuum up all the



CAUTION Be sure to vacuum the dust from your machine before trying this procedure and disconnect dust-collection hoses from the saw.

saw dust in and around your saw beforehand. Also, the blade can be quite hot after continuous cutting, so keep your saw running but give the blade a break from cutting from time to time to let it cool. Otherwise the rubber tire on the wheel could melt. We recommend using ceramic blocks or the stock metal-guide blocks that came with the saw.

Source Woodworker's Supply, (800) 645-9292, www.woodworker.com Ceramic guide blocks for a Delta 14-in. bandsaw, #108-443, \$19. Ceramic guide blocks for a Jet 14-in. bandsaw, #108-737, \$19. • MSC, (800) 645-7270, www.mscdirect.com 105-in. x 1/2-in. Starrett Flexback metal-cutting bandsaw blade, #00224568, \$13.

NEW METAL-CUTTING BLADE

Cutting steel at high woodcutting speeds turns a new metal-cutting blade into a dull but effective friction-cutting blade that can cut up to 1/8-in.-thick steel.

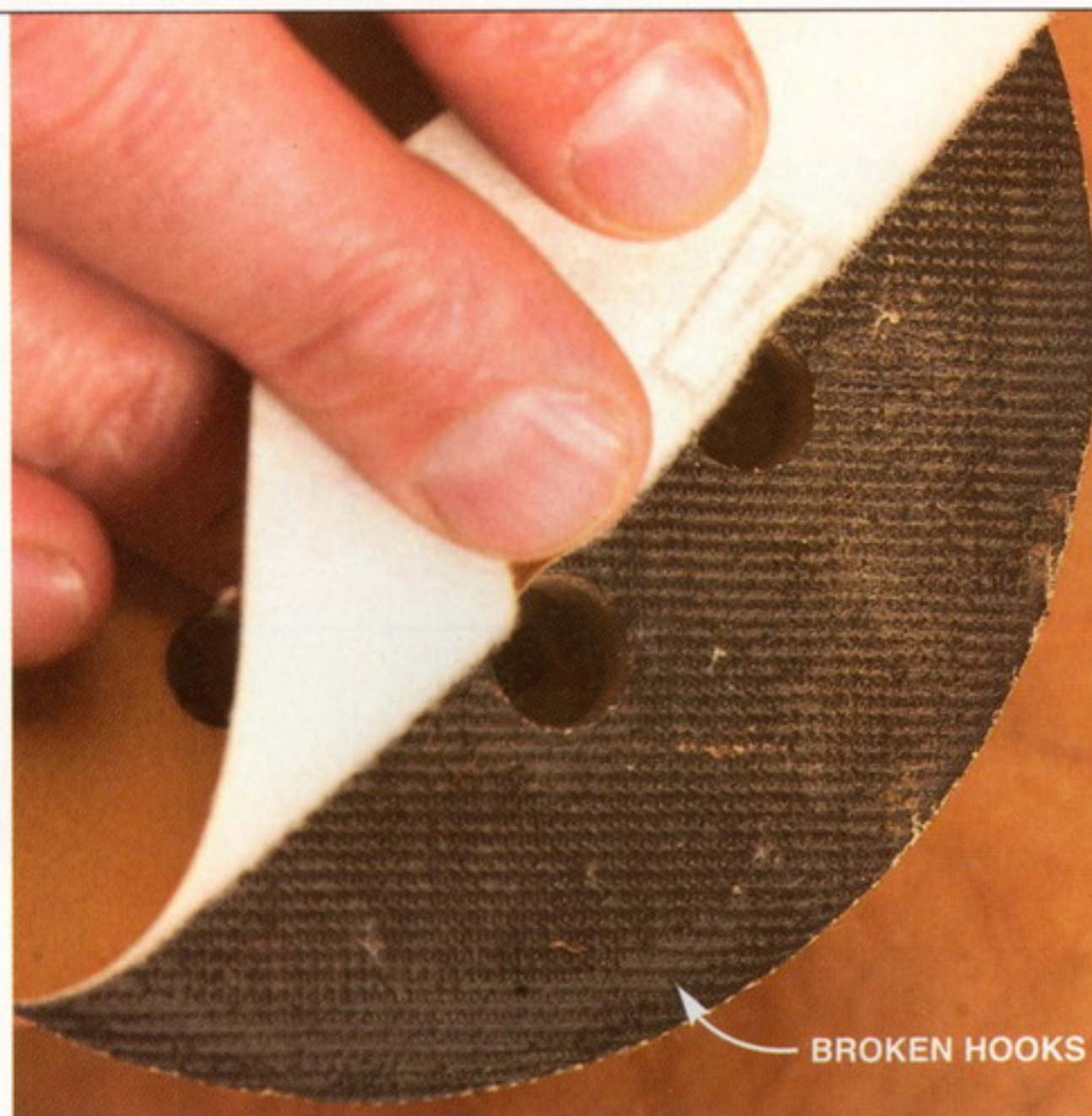
BLADE AFTER CUTTING STEEL

LONGER LIFE FOR HOOK-AND-LOOP PADS

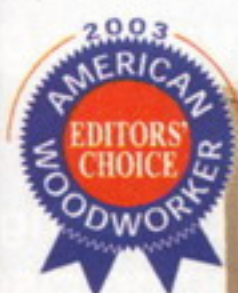
Q I love the hook-and-loop sanding pad on my random-orbital sander, but I had to replace it twice last year. My goal is to get more life out of my pads. Any suggestions?

A Manufacturers tell us that heat and pressure are the main culprits for wear on hook-and-loop pads. A worn pad that has damaged hooks has trouble holding the paper when the sander is turned on.

It turns out that prolonging the life of your pad boils down to good sanding habits. Allow the paper and the sander, rather than your arms' strength, to do the work. Bearing down on the sander generates more heat and puts excessive pressure on the pad. Keep the sander flat on the work so pressure is distributed evenly across the whole pad. Don't be tempted to tip the sander on edge to concentrate the pressure. Remember that the outer edge of the pad spins at a much higher speed than the center and thus generates more heat. This explains why bare spots from missing hooks appear at the outer edge of a worn pad first (see photo, above).



Also, remember to change the sandpaper frequently. Dull paper is an open invitation to adding pressure. One last thing: Make sure you always leave sandpaper on the pad. It protects the hooks and keeps you from accidentally running the sander without paper.



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DON'T TOSS OLD VARNISH—USE IT

Q How do I properly dispose of leftover finishes?

A The very best way to dispose of old finish materials is to use them. Several hazardous-waste recycling agencies contacted about this question agreed that this is not only the best practice for the environment but for your wallet as well. Use old finish to seal the inside drawers or the interior of a cabinet where it won't be easily seen. You can thin old varnish and use it as a seal coat on bare wood. Old stain can be spread on scrap wood and allowed to dry before disposal.

If the finish has turned to a gelatin or is otherwise unusable, let the remaining varnish dry in the can. A water-based finish can be put in the garbage after it has dried into a solid chunk.

Usable solvent-based finishes should be taken to your community's hazardous-waste facility, so they can be disposed of in a way that minimizes their negative environmental effects.



If you have a question you'd like answered, send it to us at **Question & Answer, American Woodworker, 2915 Commers Drive, Suite 700, Eagan, MN 55121** or e-mail to qanda@readersdigest.com. Sorry, but the volume of mail prevents us from answering each question individually.

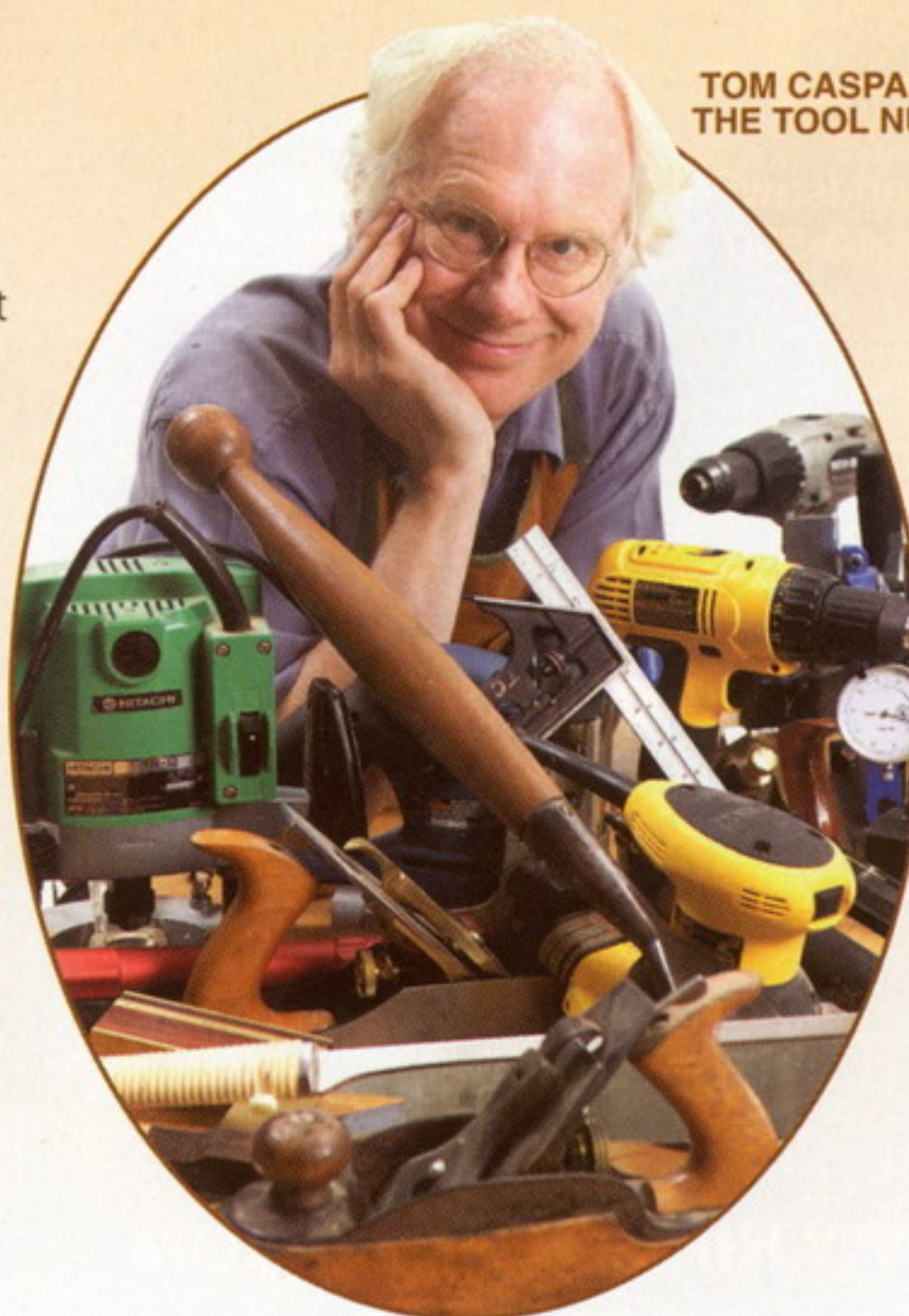
Calling all Tool Nuts!

I really don't need five cordless drills, seven routers or 24 antique hand planes, but I can't help it. I'm a tool nut. **Are you?**

Have you ever bought an old woodworking machine just because it looked cool? Tried a new tool and said, "Wow! This just changed my life!" Used a big, industrial machine and wondered how in the world you could sneak it into your shop?

We'd like to hear your stories. So e-mail or send us a letter about a tool or machine that really gets you excited. We'll pay you \$150 if we publish your story. Please include a photograph, too. We'd prefer a digital image, but a slide or print is OK. Visit our Web site, www.americanwoodworker.com/toolnut for some examples of what we've got in mind.

E-mail your entry to thetoolnut@readersdigest.com or write to us at The Tool Nut, American Woodworker magazine, 2915 Commers Dr., Suite 700, Eagan, MN 55121.



**TOM CASPAR,
THE TOOL NUT**

edited by Tim Johnson

Auxiliary Compressor Tank

My small air compressor cycled so often during use that the noise almost drove me crazy. As much as I hated to spend the money, it looked like a bigger compressor would be my only option. That's when I discovered air-storage tanks. By connecting a 5-gal. storage tank to my compressor's tank, I more than doubled its air-storage capacity. Now my compressor cycles much less frequently.

Standard plumbing components, available at any hardware store, connect the storage tank to the compressor (see photo, left). The storage tank is still portable because the input ball valve allows airtight disconnecting and reconnecting.

The tank is mounted upside down, so the moisture produced by the compressed air collects in a 4-in.-long trap. Cracking a ball valve mounted at the end of the trap expels the moisture.

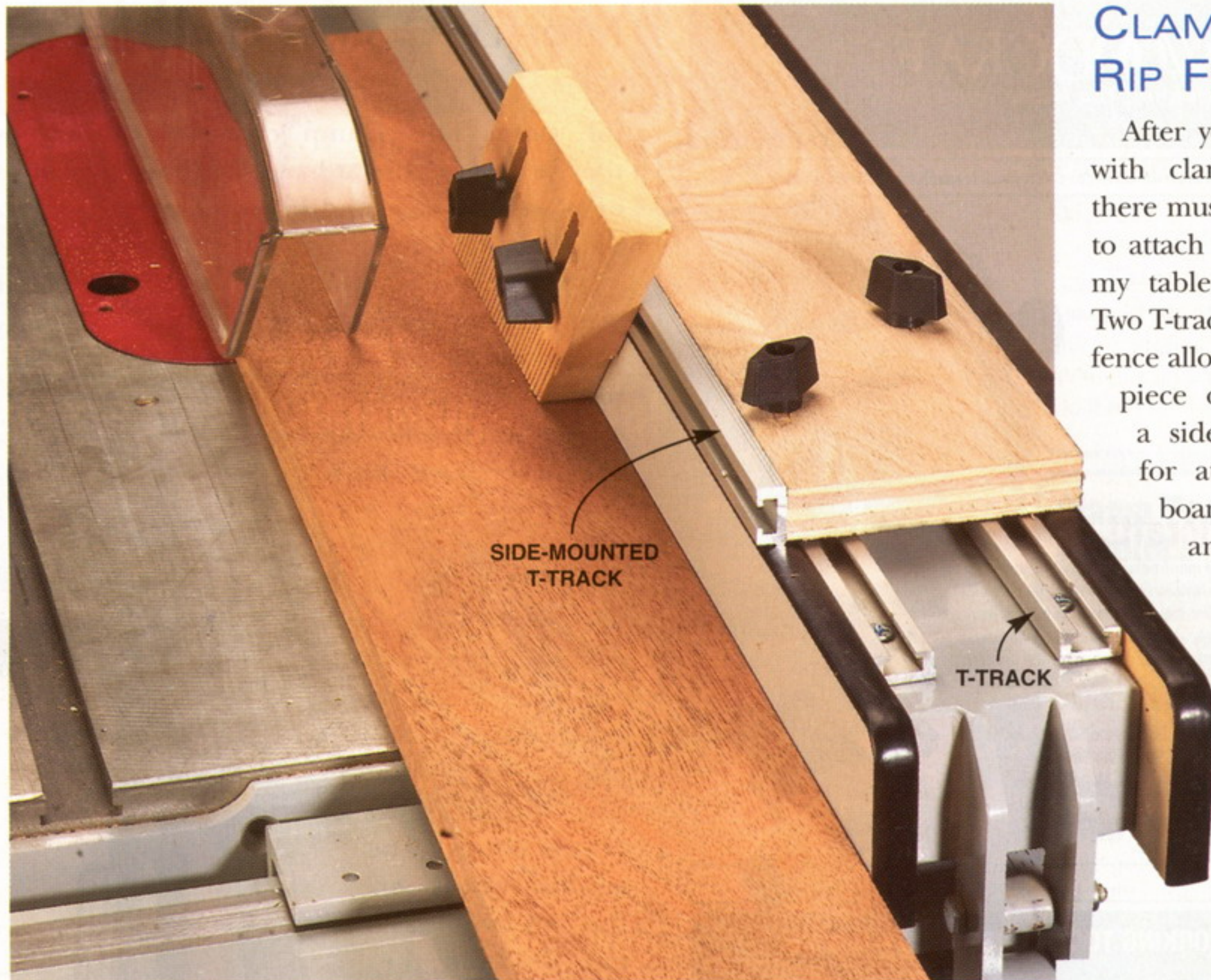
My total cost was about \$50. Make sure the pounds-per-square-inch (psi) pressure rating of the storage tank you buy is equal to or greater than your compressor's psi rating.

An onboard safety switch prevents the compressor from pressurizing higher than its psi rating, so I fully open the compressor's regulator and use the storage tank's regulator to adjust the line pressure. This arrangement pressurizes both tanks to the compressor's limit and provides maximum air storage.

Richard Tendick

Sources Sears, (800) 349-4358, www.sears.com
5-gal. horizontal air tank, #00915200000, \$20. • MSC Industrial Supply, (800) 645-7270, www.mscdirect.com
1/4-in. regulator with gauge, #04290490, \$31. 1/4-in. ball valve, #37009727, \$9.





CLAMP-FREE RIP FENCE

After years of fumbling with clamps, I decided there must be a better way to attach featherboards to my table saw's rip fence. Two T-tracks screwed to the fence allow me to mount a piece of plywood with a side-mounted track for attaching featherboards. Now I can set and adjust my featherboards with ease.

Loren Englemann

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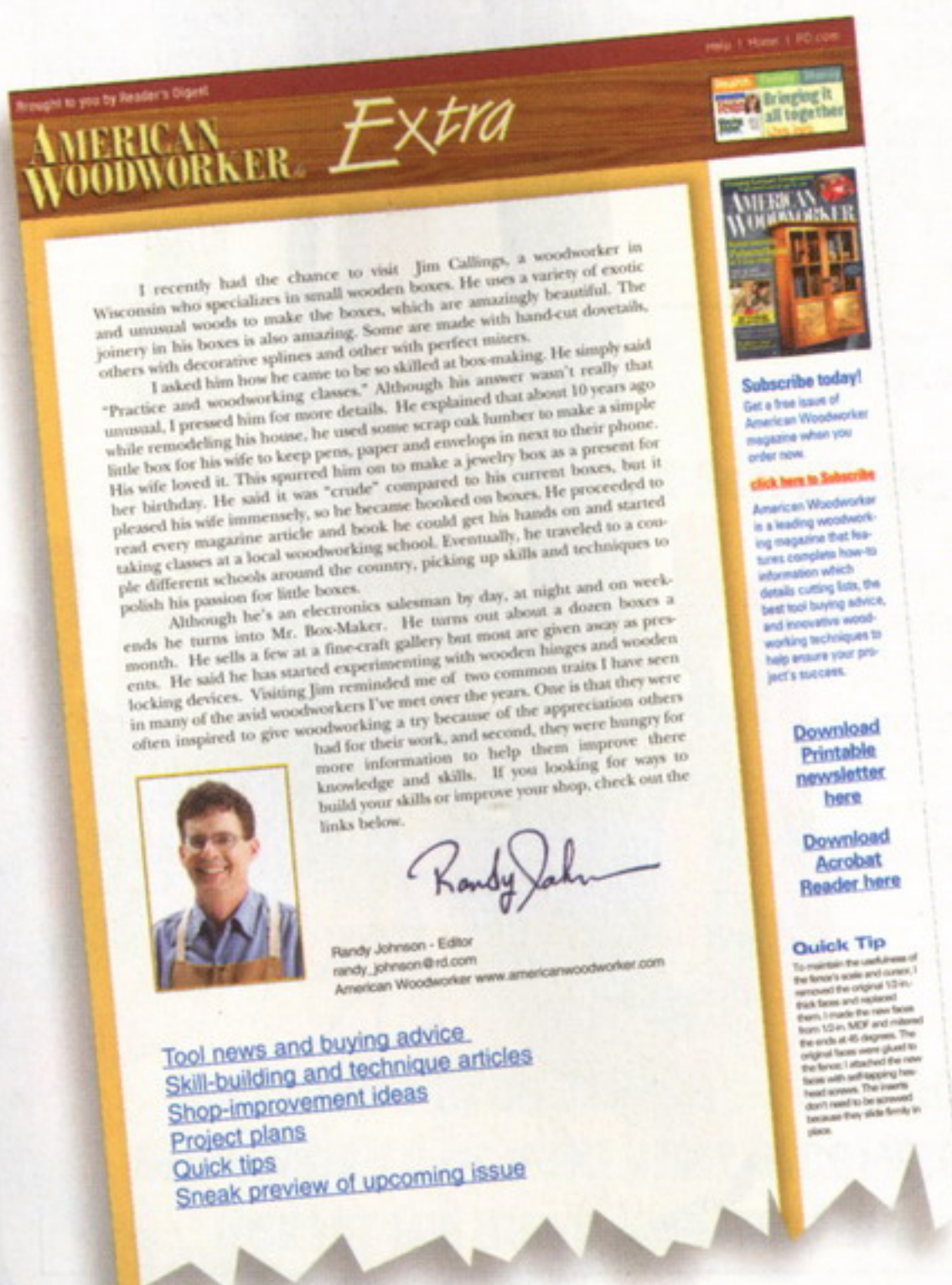
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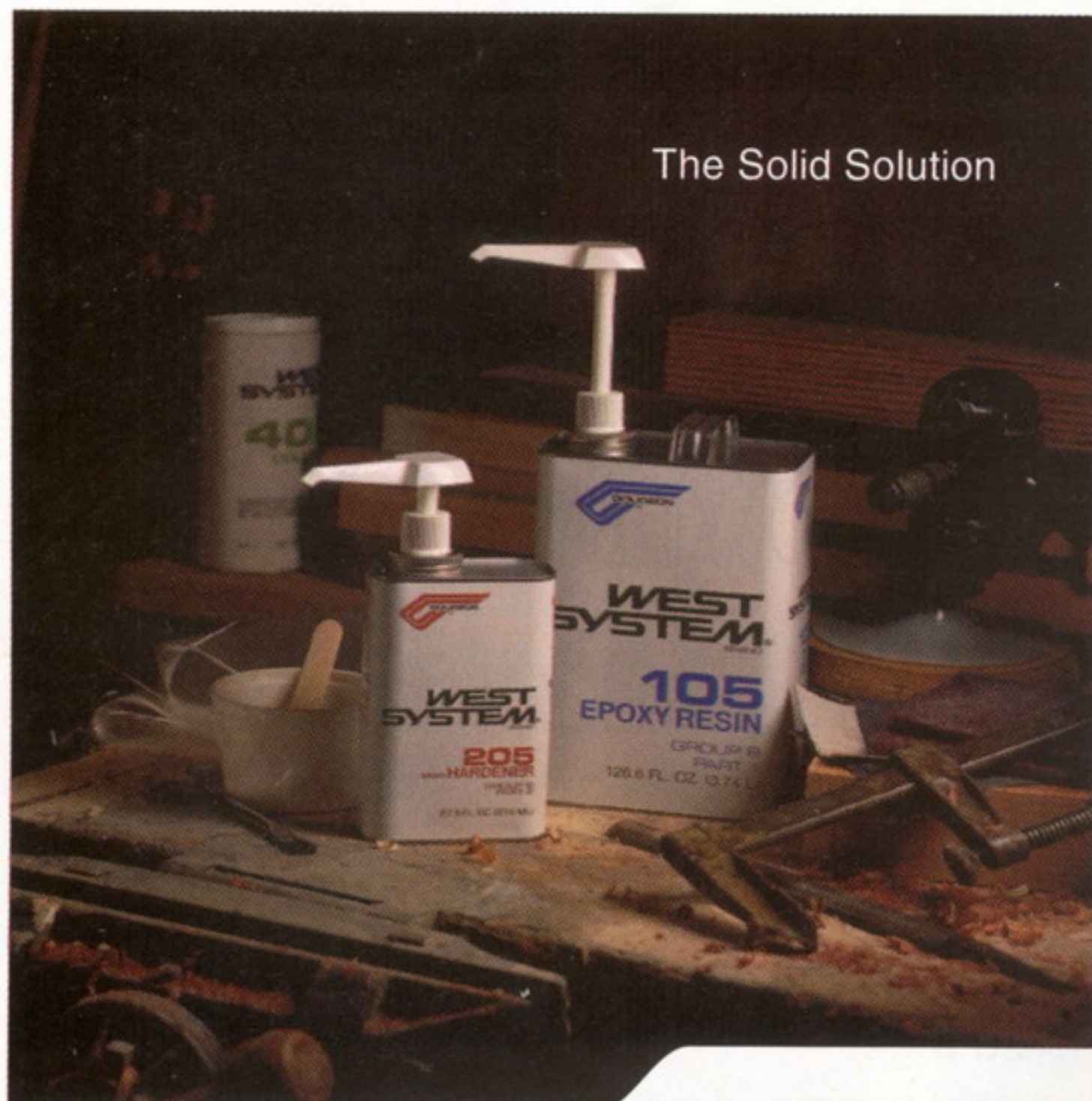


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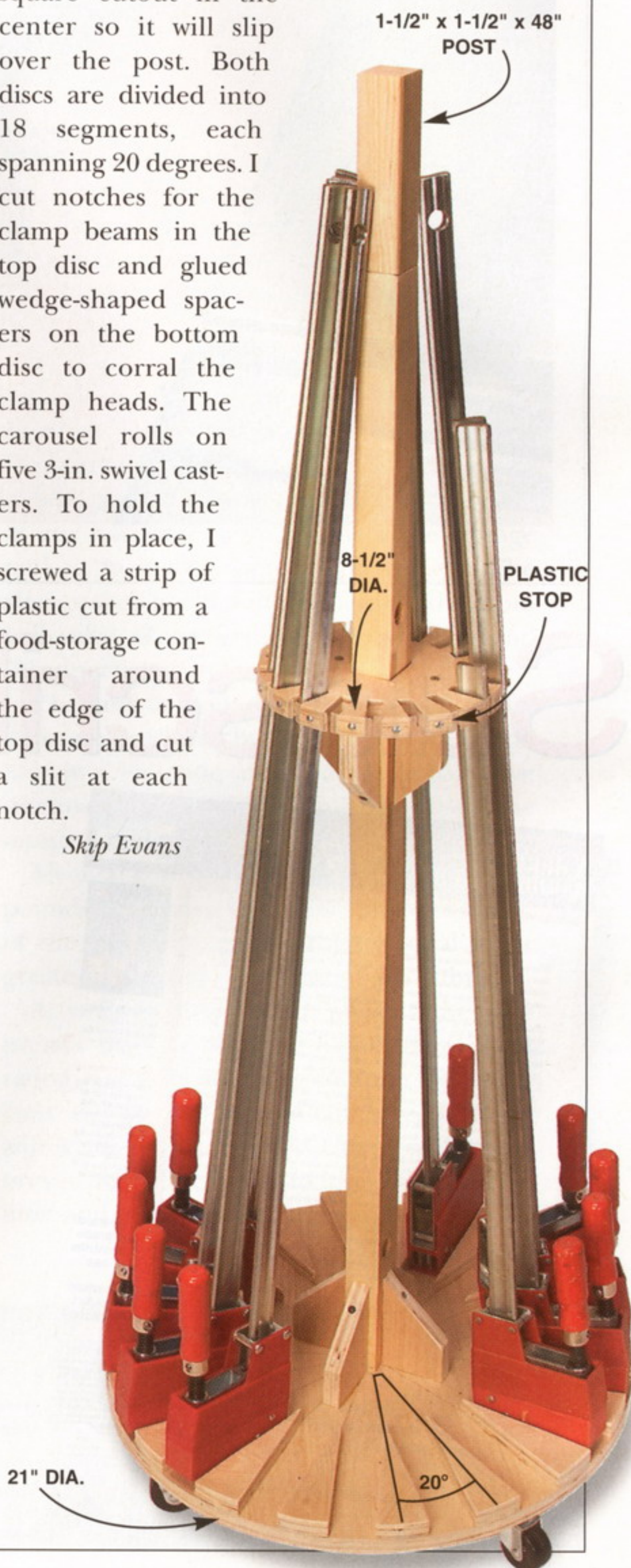
WORKSHOP TIPS

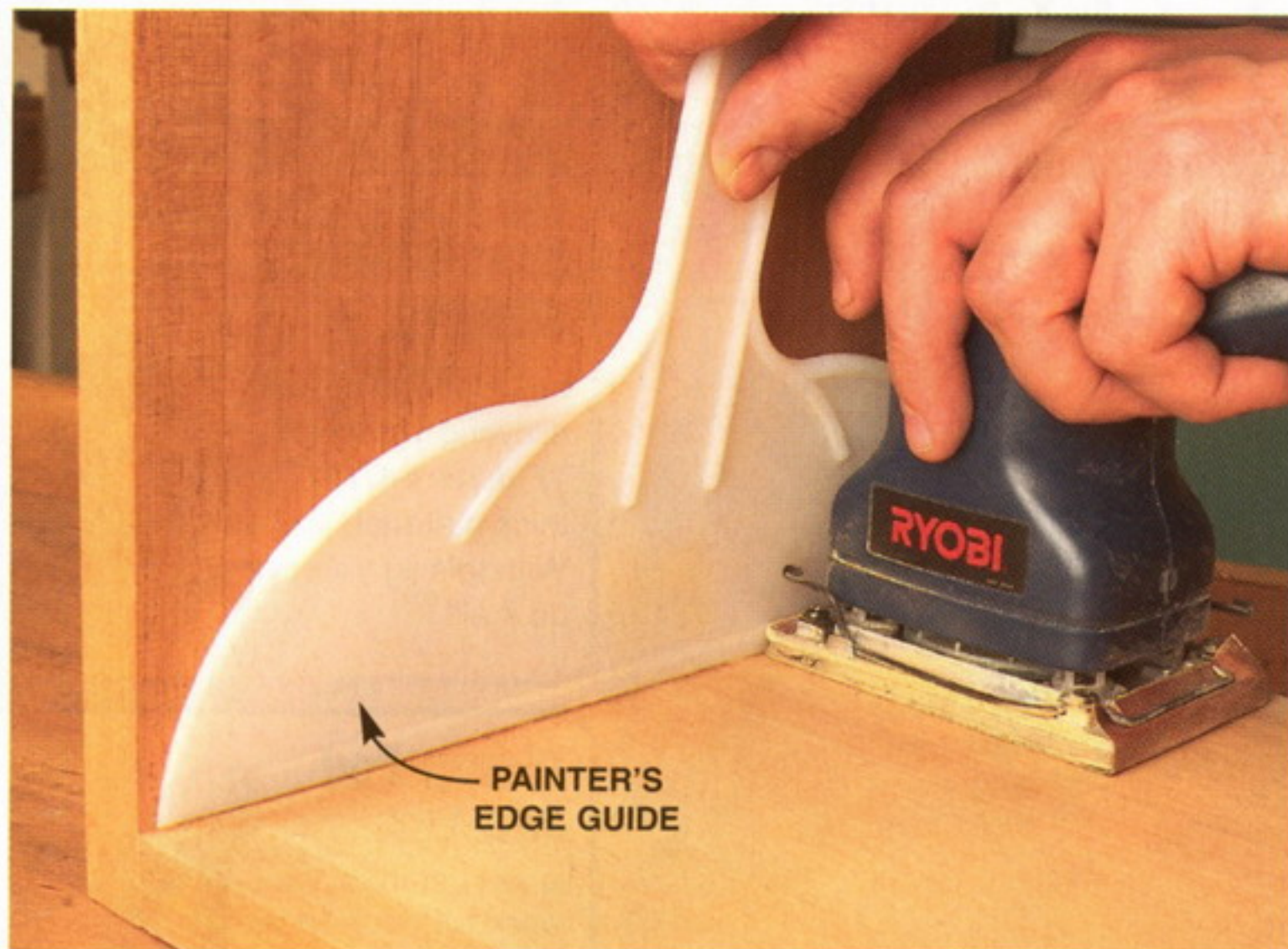
MOBILE CLAMP CAROUSEL

I've got a pile of K-body clamps that I use all the time. This clamp carousel guarantees they're always close at hand. It stores 18 clamps in a 2-sq.-ft. space, and I can roll them right to the job.

My carousel consists of two 3/4-in. plywood discs securely fastened to a center post by glue, screws and braces. The top disc has a 1-1/2-in. square cutout in the center so it will slip over the post. Both discs are divided into 18 segments, each spanning 20 degrees. I cut notches for the clamp beams in the top disc and glued wedge-shaped spacers on the bottom disc to corral the clamp heads. The carousel rolls on five 3-in. swivel casters. To hold the clamps in place, I screwed a strip of plastic cut from a food-storage container around the edge of the top disc and cut a slit at each notch.

Skip Evans





PAINTER'S
EDGE GUIDE

SANDING GUARD FOR INSIDE CORNERS

Sanding inside corners used to leave nasty buzz marks from my sander banging into the adjacent face. I still haven't tamed my sander, but now I get buzz-free results by protecting the adjacent face with a painter's edging guide. It costs less than \$2 at a home center and is so thin that I can sand virtually all the way into the corner. Now sander-base-whacking won't leave marks.

Madeline St. Amant



PONYTAIL CORD HOLDERS

Dangling power-tool cords were sure to trip me or knock something over if I didn't weave them around the tool before transporting it. And my cord weaving always seemed to unravel after about 10 paces.

My daughters gave me the idea to use elastic ponytail holders (\$2 to \$3 for a pair). Now I just loop the elastic band around the cord and hook it over the ball; secure bundling takes a second. My daughters say the holders make my shop look pretty.

Gregg Helmich

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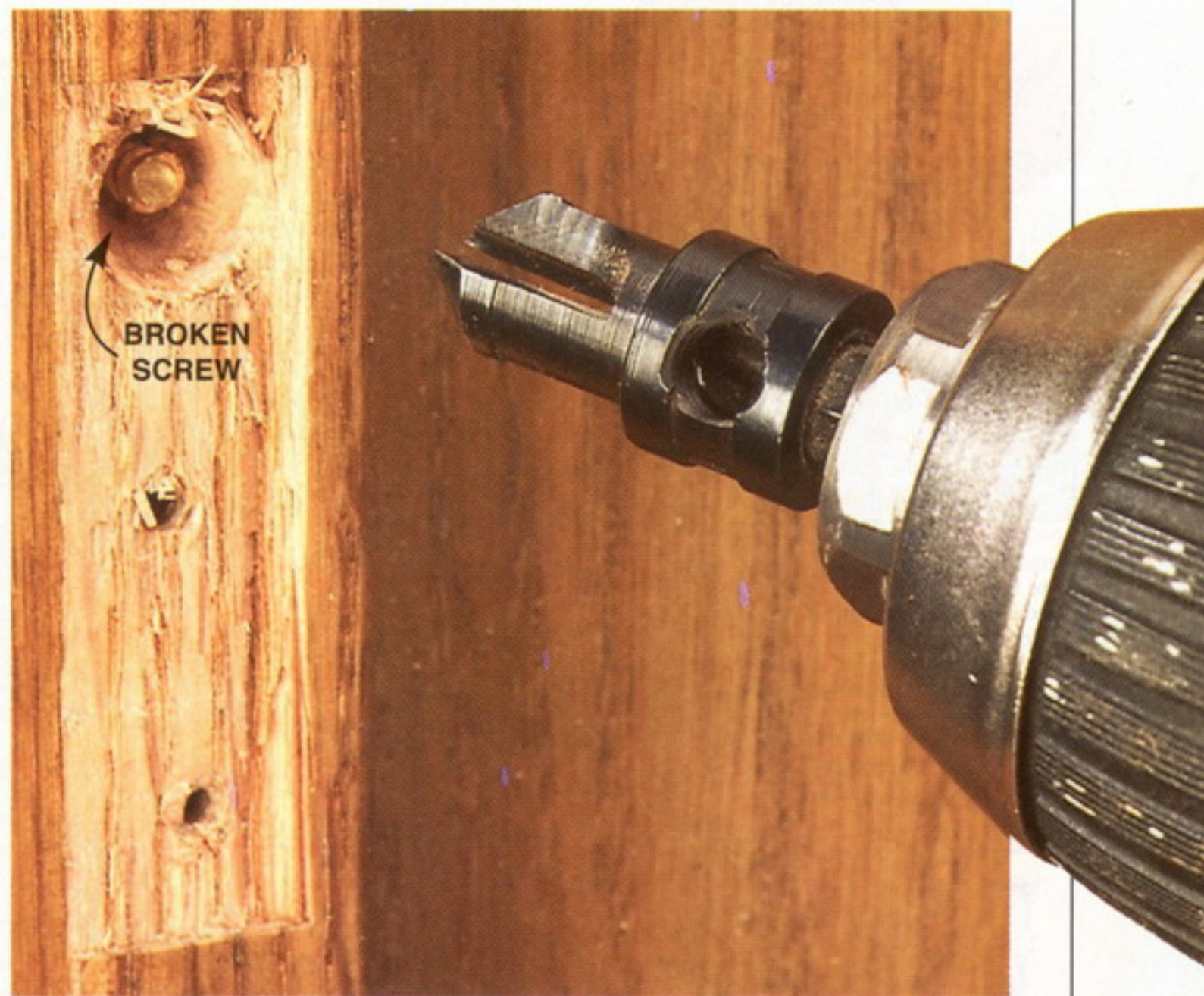
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BROKEN SCREW EXTRACTOR

Murphy's Law guarantees that screws will break at the worst times. Fortunately, I've found a simple way to extract the headless shank and repair the damage. I use the countersink collar from one of my drill-and-countersink sets. Make sure the countersink's bore is slightly larger than the buried shank. Use the countersink to drill around the broken screw. If drilling alone doesn't free the shank, the oversize hole creates room for needle-nose pliers to grip and turn.

After the broken screw has been removed, glue in a plug cut from the face of another board. Face-grain plugs hold screws much better than end-grain dowels. Pare the plug flush with the mortise, and you're back in business.

Paul Boutin



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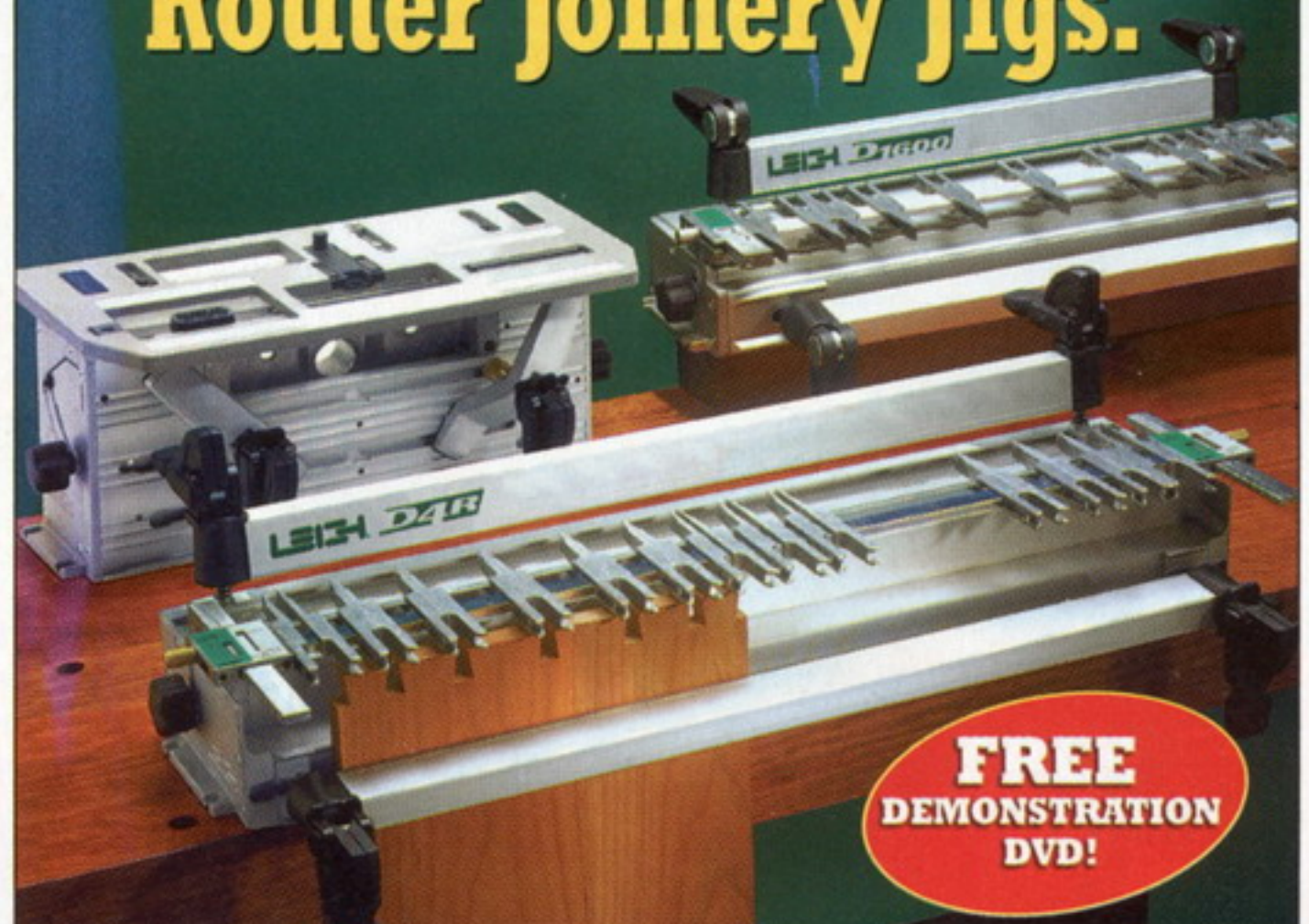
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by Richard Tendick

The SawStop

A high-tech saw sacrifices its blade to save your fingers.

What's that weird device stuck to this saw blade? It's a brake. This revolutionary device stops the blade just in time to prevent a terrible accident.

The SawStop is the first tablesaw to feature a brake. It's like a car's airbag: You hope you never need it but thank your lucky stars it's there. And yes, the brake really does work. It doesn't completely eliminate the risk of injury, however. You might only get a small cut but you'll still have all your fingers.

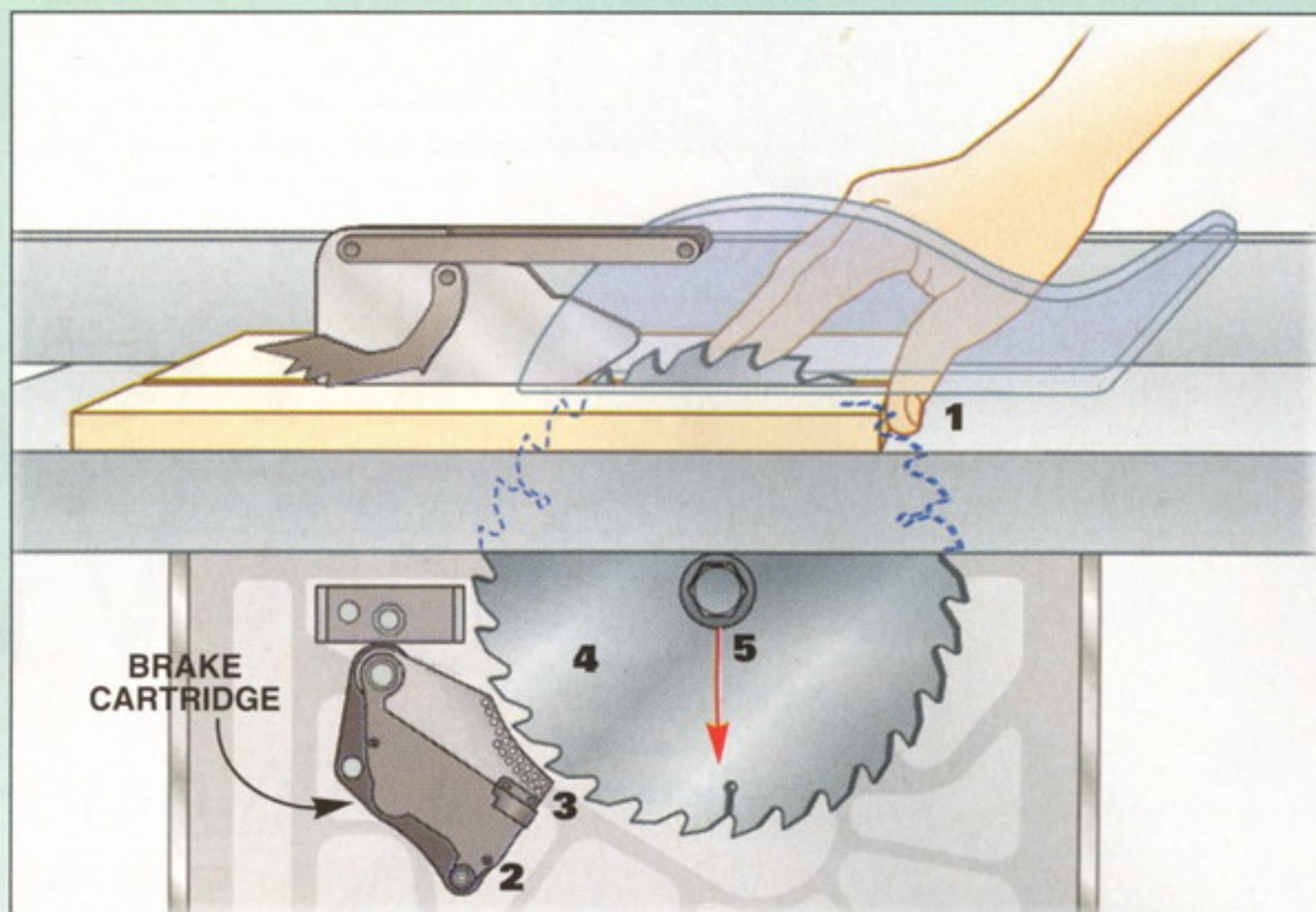


I The SawStop is a 3-hp cabinet saw. I've built dozens of projects with it in the American Woodworker shop during the last year. I love its safety features, but equally important, it's a terrific saw.

How Does THE BRAKE WORK?

If your finger accidentally touches a blade under power, two things happen. First, an aluminum brake instantly jams against the blade, bringing it to a stop. Second, the blade drops below the table. The blade and brake fuse together, so both must be replaced, but that's a small price to pay for averting a major injury.

How does the blade sense your finger? It's all about electricity. The same principle is used in a lamp that turns on or off when you touch its base. The blade holds a very slight charge; when you touch it, some of the charge enters your fingers. The saw's circuitry senses a change in the blade's charge and releases a powerful spring inside the brake. The blade's momentum throws it below the table.



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The SawStop's blade stops and drops incredibly fast. Here's what happens:

- 1** Your finger accidentally touches a moving blade. The blade carries a small electrical charge; your finger drains some of the charge.
- 2** The saw senses the drain and releases a spring inside the brake cartridge.
- 3** The brake slams into the blade. Time elapsed since touching the blade: 1 millisecond (.001 seconds).
- 4** The blade completely stops. Total time elapsed: 4 milliseconds.
- 5** The blade drops below the table. Total time elapsed: 10 milliseconds.

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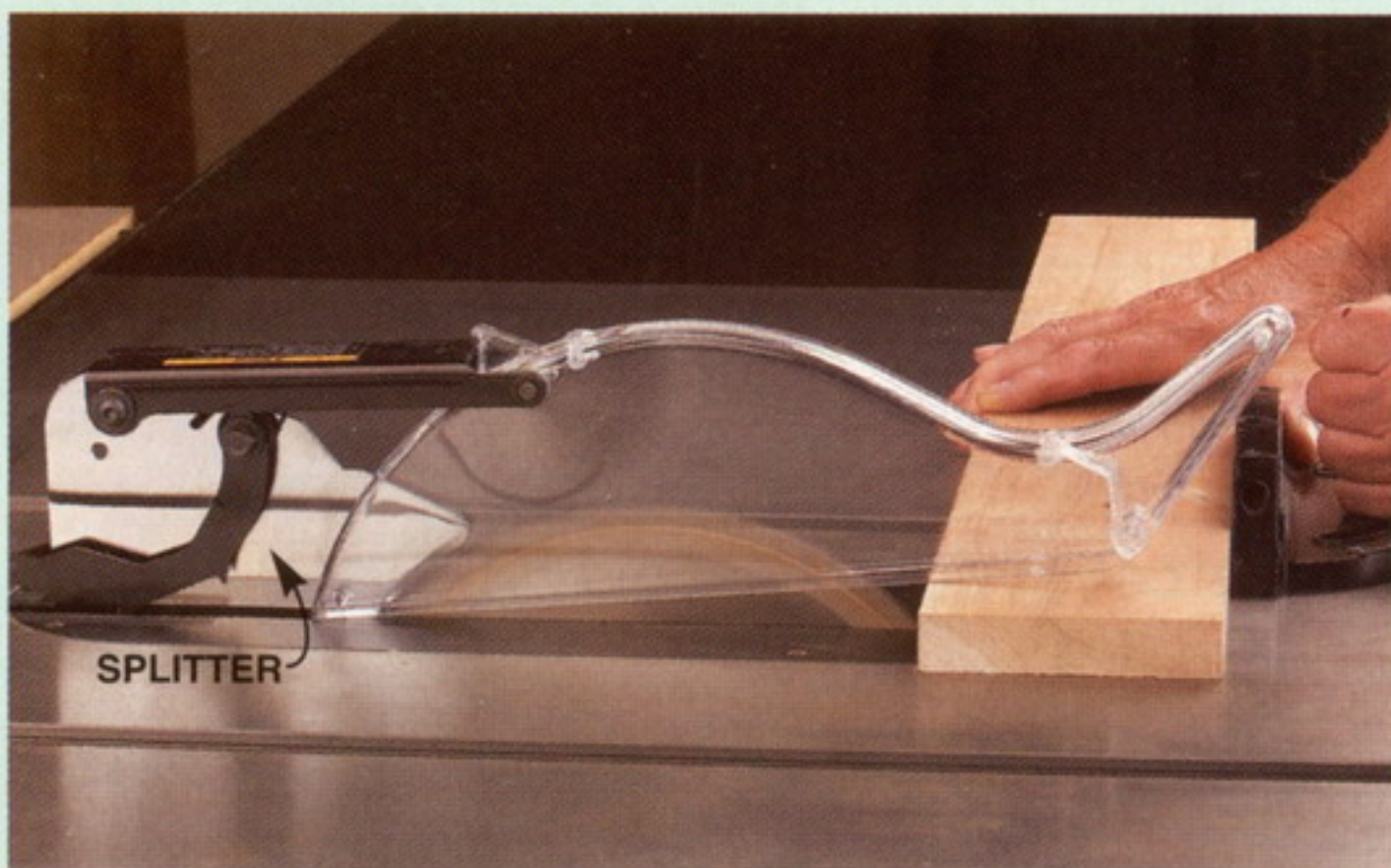
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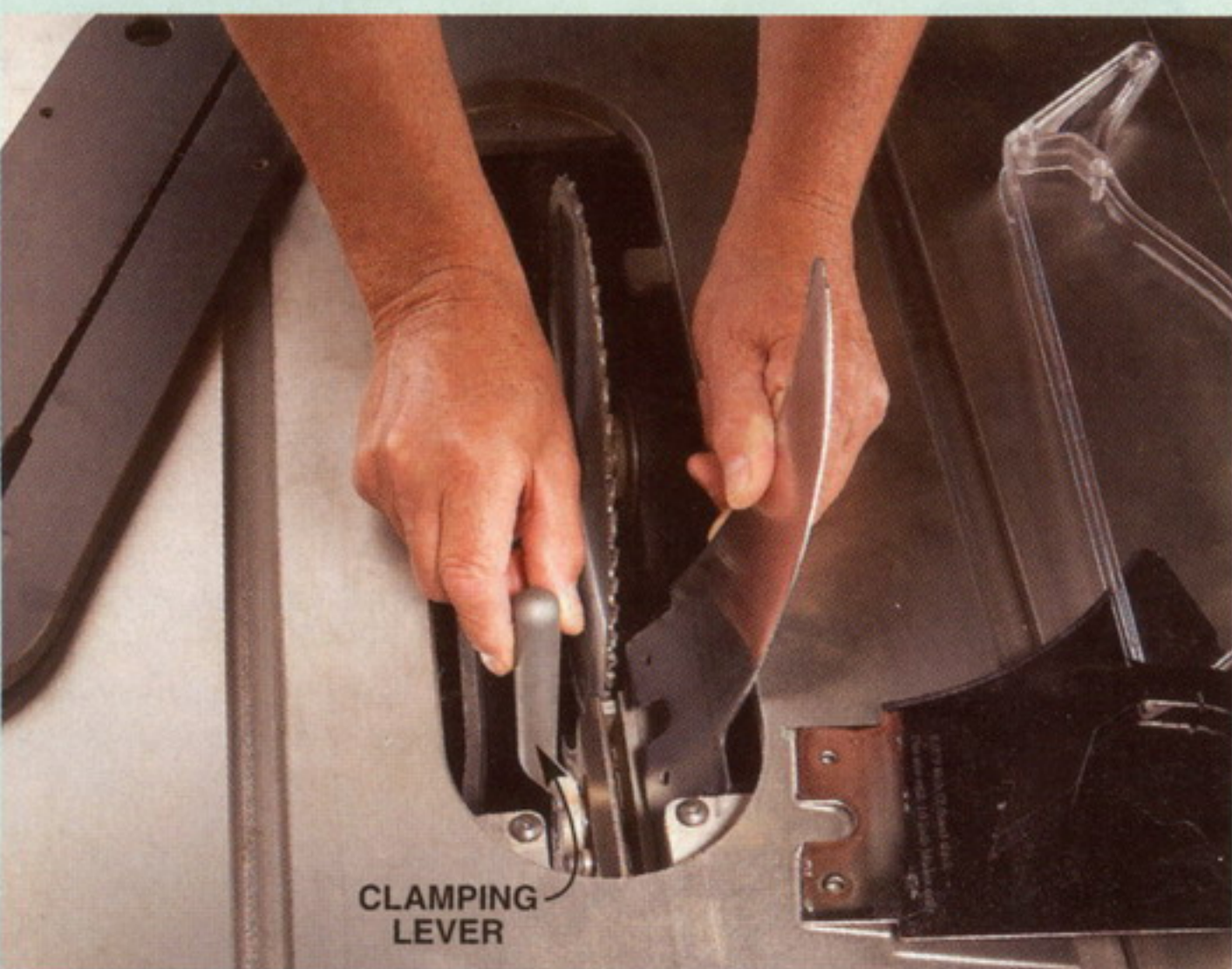
3230 N Susquehanna Trail, York, PA 17402-9716



2 The SawStop comes equipped with a user-friendly blade guard. It's completely clear, so you can always see the blade. The splitter goes up and down with the blade. The gap between the blade and splitter is always less than 1/8 in., which minimizes kickback.



3 SawStop provides a riving knife for those cuts that can't be made with a blade guard, such as this rabbet. The riving knife goes up and down with the blade, too. The top of the riving knife is always 1/32 in. below the top of the blade.



4 Switching between blade guard and riving knife takes less than a minute. Both clamp in a slot behind the blade. All you have to do is unscrew the throat plate and throw a lever.

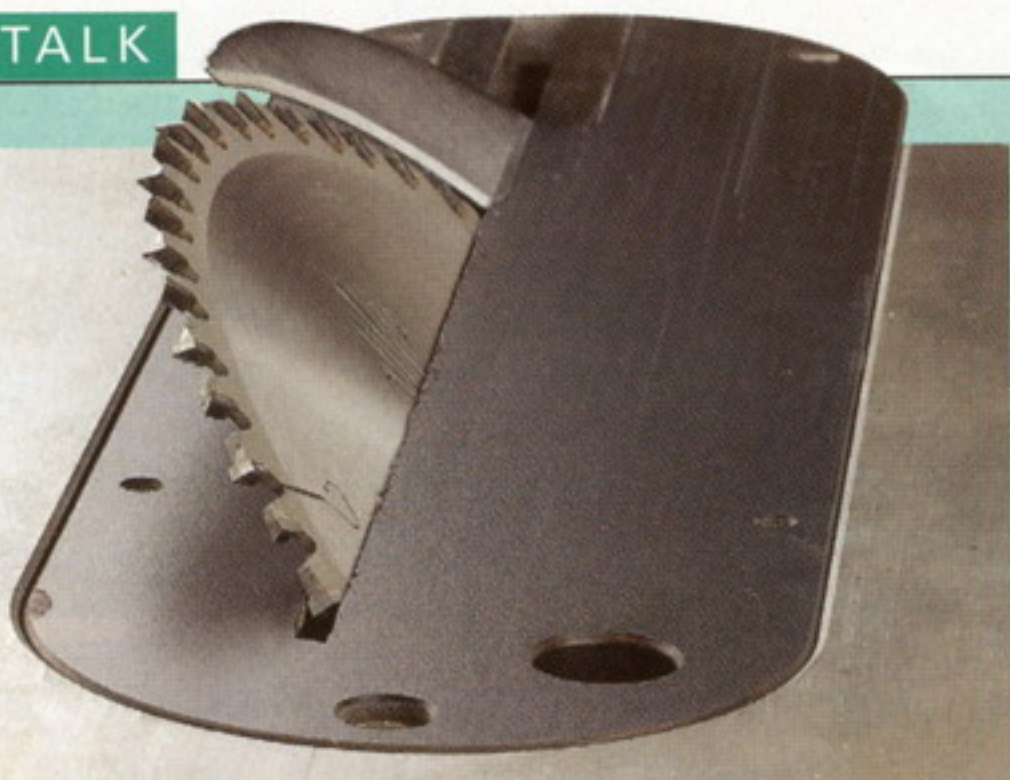
How much is this protection worth to you? For me, quite a lot. A completely loaded SawStop package with 52-in. rails costs about \$3,500 (Photo 1; see Source, page 27). That's about \$1,700 more than a roughly equivalent cabinet saw without the SawStop brake and other safety features. I consider that difference to be a one-time payment toward greater peace of mind.

Of course, paying that premium might not make sense if all you get is a mediocre saw. Let me make this clear: Brake aside, this is one heck of a good saw. It has a well-designed, extra-long T-square fence with an easy-to-read cursor. There are scales on both sides of the blade. The fence faces are replaceable, in case you inadvertently cut into them. It has a 220-volt 3-hp motor, more than enough power. Its miter gauge has virtually no play for accurate cuts. Dust collection is provided by a shroud around the blade that connects to a 4-in. port. The 30-in. tabletop is deeper than most saws' 27-in. depth. Everything feels solid and ruggedly built. What more could you want?

Lots of safety features, that's what. Here are the most interesting ones:

- **The brake.** This amazing device works with any 10-in. blade (see "How Does the Brake Work?" page 24). Once fired, the brake and blade must be replaced. A new brake costs about \$70. When you use a dado set, you must use a different, wider brake (about \$90). You'll fumble around the first time you switch brakes, but once you've figured it out, the exchange only takes a minute or two. After using the saw for a year, I tested the brake; it worked fine.

- **Blade guard and riving knife.** I love this system. There's no excuse not to use one or the other with every cut you make, except for dados. I haven't seen a better manufacturer-supplied blade guard system on any other 10-in. cabinet saw (Photo 2). The best part is that boards shouldn't kick back at you or become scored or burnt, because the splitter always stays close to the blade. A riving knife is like a splitter without a basket



5 The SawStop's throat plate is a phenolic zero-clearance insert. With such a minimal gap around the blade, small offcuts won't get jammed between blade and insert. Unlike most other saws, the SawStop keeps its blade centered in the slot as it tilts, maintaining a zero clearance for bevel cuts.

guard or antikickback pawls (Photo 3). You use it for housed cuts in which the blade doesn't cut through the top of the wood. On most saws, manufacturer-supplied blade guards are awkward to mount. Not so on the SawStop (Photo 4).

■ **Zero-clearance throat plate.** You won't be tempted to grab offcuts that can



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www.arrowfastener.com Rev.1002

IT SAVED MY FINGER!

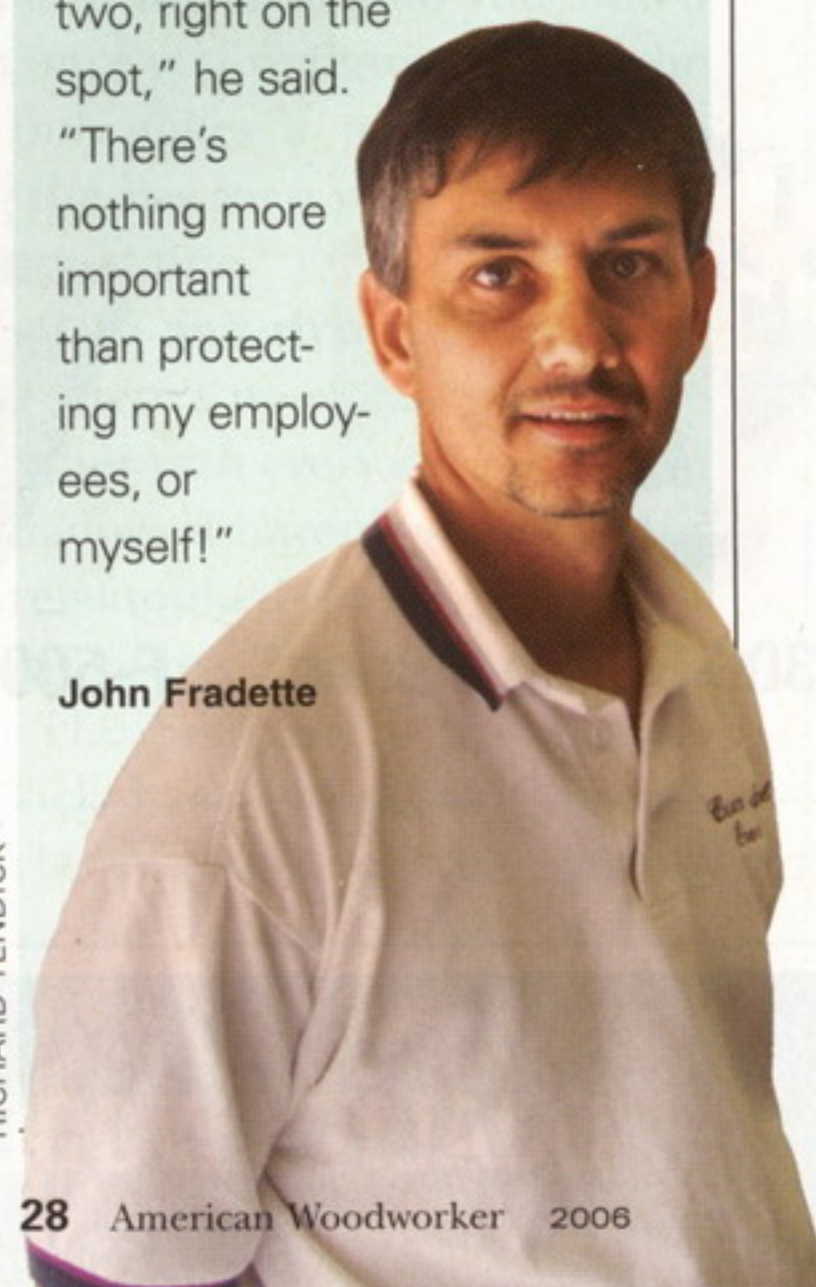
"It happened so quickly! I was in a hurry one busy afternoon, making the same cut over and over," John Fradette said. "I pushed each cutoff out of the way with my finger. One time, my finger went under the blade guard and touched the blade. Bam! The next thing I knew, the blade was gone. It had stopped dead and dropped under the table." Rather than lose a finger, John received only a scratch. "I was lucky that the saw was looking out for me."

John owns a small wood-working shop, Custom Panel Doors in Milaca, Minn. When he had first seen a SawStop demonstration at a trade show, he had acted fast. "I ordered two, right on the spot," he said.

"There's nothing more important than protecting my employees, or myself!"

John Fradette

RICHARD TENDICK



become stuck next to a spinning blade. They'll rarely stick on a SawStop because the gap around the blade is so small, even when the blade is tilted (Photo 5).

■ **Power disconnect.** Turn this switch off when you change blades (Photo 6). It's much easier than unplugging the saw from a wall socket.

■ **Paddle switch.** If you're in a pickle and can't take your hands off the wood to turn off the saw, just hit the big red Start/Stop paddle with your knee (Photo 7).

With all these goodies, is there a downside to operating a SawStop? As with most high-tech equipment, you must obey some strict rules. If you cut aluminum or wet wood, for example, you must remember to flip a bypass switch to disable the brake. Otherwise, it will fire and ruin your blade. Fortunately, the SawStop comes with a thick comprehensive manual fully illustrated with color photos. You'll figure it out, and never regret it.

Source SawStop LLC, (866) 729-7867, www.sawstop.com

6 The SawStop's power-disconnect switch can be locked in the off position. This switch is conveniently located on the saw's left side. You don't have to unplug the SawStop for safety's sake while changing blades or the guard; just turn off this switch.



7 The SawStop's huge paddle switch can be pushed off with your knee if you're in a fix. Turning the key bypasses the brake so it won't fire when you cut metal.



American Woodworker NOVEMBER 2006 29

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French Polishing

Six easy steps to a beautiful finish

French polish adds extraordinary depth to gorgeous wood. This finish is perfect for bowls, vessels, lamps and other turnings that aren't handled often or are exposed to moisture, alcohol or heat. It's easy to apply: Just hold a cloth moistened with the finish directly to your project as it spins on the lathe.

What is French polish? It's simply shellac and a little oil applied with a pad. The oil acts as a lubricant when you apply the finish. French polish is available as commercially made products, also labeled as padding

lacquer or friction polish, but I prefer to make my own from flakes, which guarantees freshness. You can achieve a variety of effects because shellac is available in a range of colors (see "Buying Shellac," page 32). Here's how you can mix your own French polish, choose different colors, apply it and rub it out.

SAND WITH FINE GRITS

Thoroughly sand all surfaces of your project to eliminate torn grain, spirals and ridges. Start with 120-grit and progress through 150-, 180- and 220-grit sandpa-



per (Photo 1). If sanding scratches still show, continue with 320- or 400-grit sandpaper. Maple and cherry often require these finer grits. After sanding, remove the dust using an alcohol-moistened paper towel.

MIX THE FRENCH POLISH

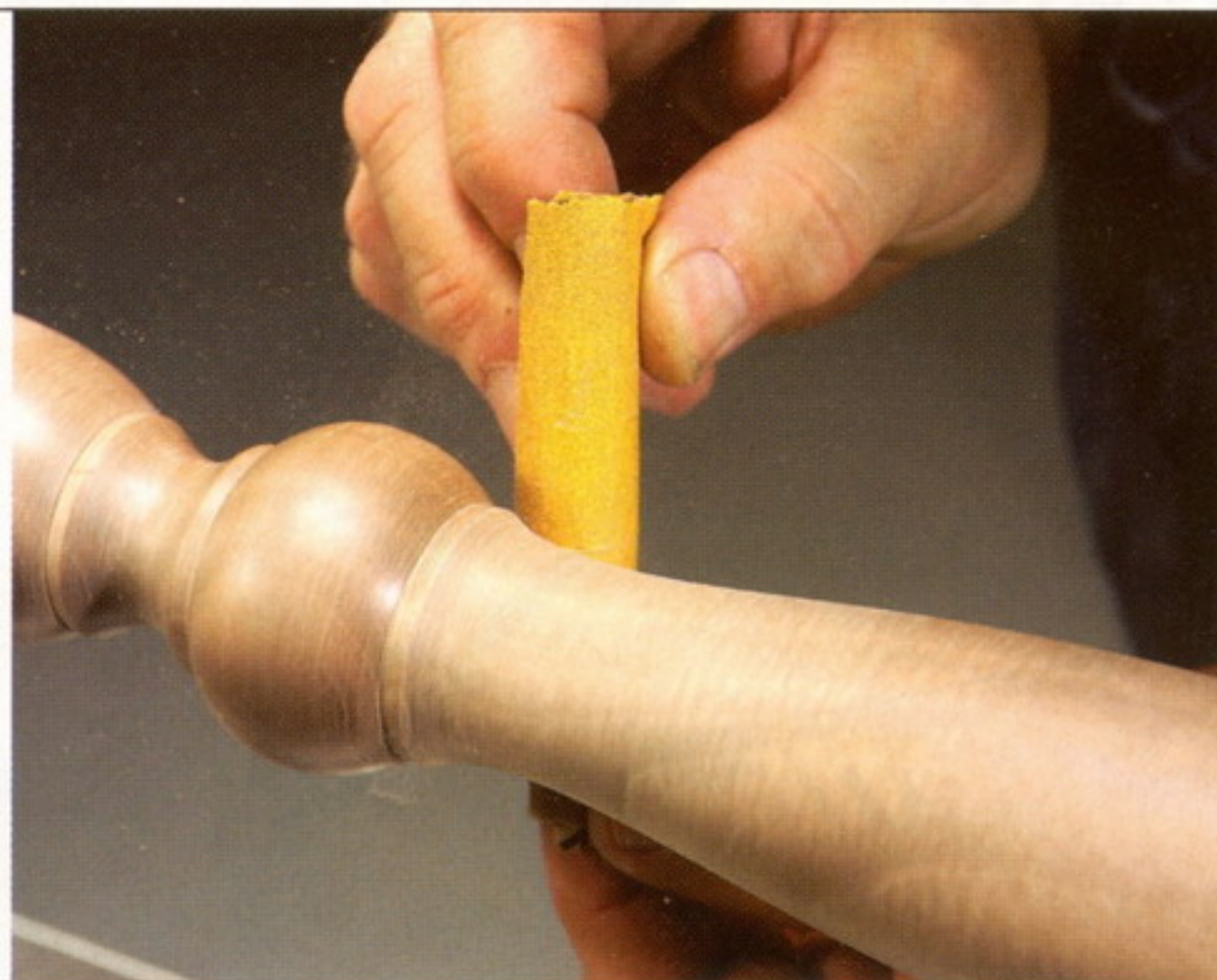
You can use shellac flakes or premixed liquid shellac to make French polish. Either way, your goal is to make a 1-1/2-lb. cut, which is the equivalent of mixing 1-1/2 lbs. of flakes with 1 gal. of denatured alcohol. That's far too much finish for most projects, however. If you use flakes, dissolve 1-1/2 oz. of flakes with 1 cup of denatured alcohol. Premixed liquid shellac comes in a 3-lb. cut. To make approximately a 1-1/2 lb. cut, thin it with an equal amount of denatured alcohol.

The final ingredient of French polish is an oil, which acts a lubricant to prevent your applicator cloth from dragging or sticking. Add 1 tablespoon of mineral oil for every 3 liquid oz. of 1-1/2-lb.-cut shellac (Photo 2).

APPLY THE FINISH

Adjust your lathe to run at a moderate speed, about 500 to 800 rpm, slower for large-diameter turnings. Make an applicator for applying the French polish from a densely woven, soft, white cotton cloth that has been washed many times to remove all lint. Soften the pad with alcohol before dipping it into the French polish.

Shake the French polish to suspend the oil, as though it were an oil-and-vinegar salad dressing. Turn on the lathe, saturate the cloth pad and flow on the finish (Photo 3). If the cloth grabs, add a half teaspoon of oil. Let this coat dry for 30 minutes before you sand it. The surface will feel dry right away, but don't grow impatient. If you hurry, the next coat will dissolve the first and you'll get nowhere in a hurry.



1 Sand your piece to eliminate flaws and sanding rings. Remove sanding dust using a paper towel moistened with denatured alcohol held against the workpiece while it's spinning.



2 French polish is a mixture of shellac and oil. Little oil is needed; it acts as a lubricant for the shellac.

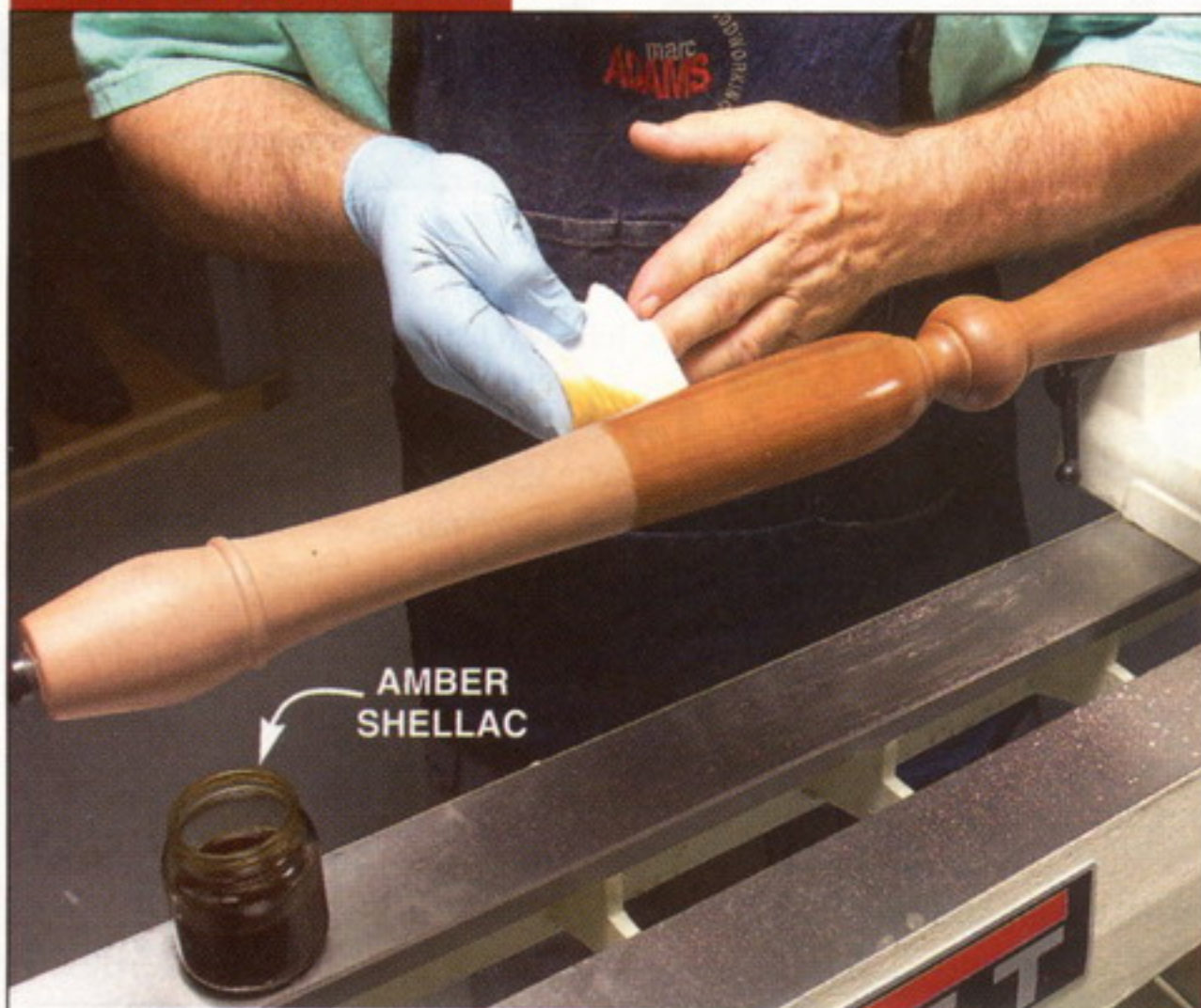
Buying Shellac

Shellac comes in a number of different colors, making it a versatile finish. You can use lighter shades of shellac to preserve natural color or use dark shades to add a warm color. I prefer to use lighter shades on light-colored woods and darker shades on dark woods.

Shellac isn't darkened by adding pigment. Shellac is made from a resin that's naturally dark; bleaching the resin produces different grades of clearer finishes. Shellac is available in dried-flake form in a range of reddish brown, orange, yellow and pale blond colors (see Sources, page 34). Flakes have an extremely long shelf life. You can make any quantity of shellac by mixing the flakes with denatured alcohol.

Shellac is also available at hardware stores in premixed form. Its shelf life is one to three years. Be sure to check the freshness date on the can, because aged shellac won't harden properly. Premixed shellac is only available in clear or amber colors.





3 Liberally apply French polish from a moistened cloth to the spinning workpiece. Wait at least 30 minutes between coats.



4 Sand between coats using a fine synthetic sanding pad. Five or six coats produce a beautiful, deep finish. Amber shellac adds a warm tone to this walnut leg.



5 Your cloth will stiffen between coats. Soften the cloth by moistening it with denatured alcohol and then dip in the French polish.



6 French polish is naturally glossy. Rub out the finish with automotive polishing compound or fine abrasives if you want a soft luster instead.

Sand the first coat with 400-grit sandpaper and remove the sanding dust. Subsequent coats require less sanding. A synthetic sanding pad is all you need to achieve a smooth surface for the final coats (Photo 4).

Apply five or six coats. It's better to apply a number of light coats rather than a few heavy coats. Taking this approach prevents ridges or runs in the finish. Soften your cloth pad before each coat (Photo 5). Wait at least 30 minutes between coats. If your shop cools below 70 degrees, extend the waiting period another 15 minutes or so. Don't apply the finish in temperatures below 55 degrees.

BUFF THE FINISH

After the last coat, you can leave the polish as is for a high luster. If you prefer to soften the luster, let it dry several days and rub it out with a finishing compound or fine abrasives (Photo 6). I like to use automotive polishing compound for this process because it costs little, is readily available and does a great job. Apply the compound with a soft cloth. Work gently until you get the look you're after. If the compound gets trapped in the pores, wash it off with naphtha or mineral spirits. Neither will harm the finish.

Sources Shellac.Net, www.shellac.net Shellac flakes, \$11 to \$17 per pound. • Klingspor, (800) 228-0000, www.woodworkingshop.com Synthetic steel wool, 10 pack, #NW06254, \$9. • Wooden Post, (888) 595-7126, www.woodenpost.com Abralon synthetic sanding pads, 500 grit, #1778, \$5.45 ea; 1,000 grit, #1779, \$5.45 ea.

Best New Pr

Woodworking tool manufacturers exhibit their new products annually, just like car manufacturers do. For many tool manufacturers, the unveiling takes place in late summer

or early fall at a big woodworking show. How big? Try 800,000 square feet of show space with more than 1,300 exhibitors. This year's show was the International Woodworking

Fair (IWF) in Atlanta in August. "Hot?" you ask. Yes! But so are the new tools. This show is a candy store for woodworkers. What follows are some of the items that I

HUGE-CAPACITY 14-IN. BANDSAW

Rikon's new 14-in. bandsaw, \$795, looks like a great saw at a great price. The first thing that caught my eye was its resaw capacity: a full 13 in. That exceeds the capacities of many other 14-in. saws. The slot in the table, required for replacing blades, also caught my eye. It's in the front of the table instead of the side. That means no more twisting and racking the blade to get it on and off the saw. Great idea. And instead of simply enclosing the cabinet on the saw's base, Rikon put a hinged door on it. Now that otherwise wasted space can be used for storage.

The saw comes with a light, fence, ball-bearing guides and a quick-release handle for blade tension. This two-speed machine will run at 1,445 or 2,950 feet per minute. It's equipped with a 1-1/2-hp motor that can be wired for 110 volts (14 amps) or 220 volts (7 amps).

Source Rikon, (877) 884-5167, www.rikontools.com 14-in. bandsaw, #10-325, \$795.

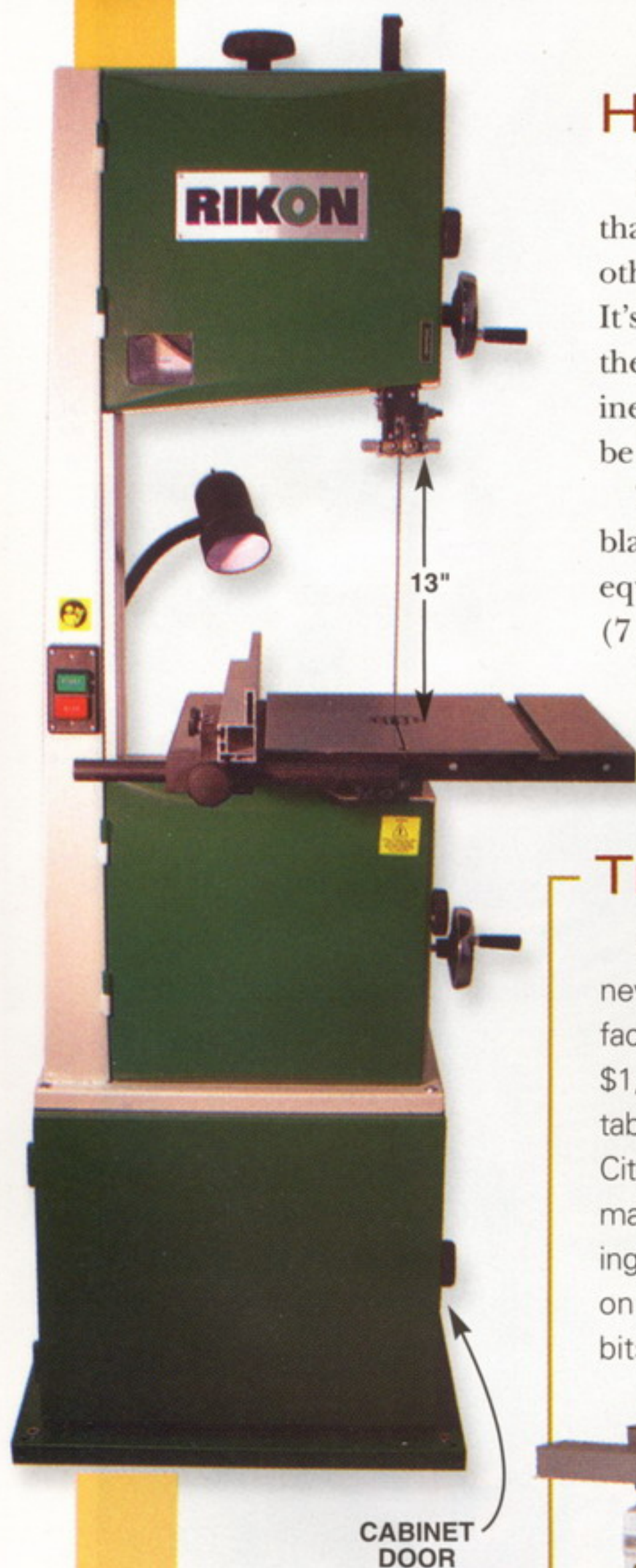
TITANIUM-COATED TABLESAW

Steel City Tool Works' cabinet saw brings new technology to the surface—the table surface, that is. The company's 35630 saw, \$1,850, comes with a titanium coating on the table surface. According to the folks at Steel City, this harder-than-carbide coating will dramatically reduce wear and eliminate scratching and corrosion. It's the same material used on titanium-coated drill bits, but

this is the first time it has been put on a saw's table. The Steel City group figures this will save woodworkers time and money spent on tabletop maintenance.

This 483-lb. machine has a right-tilt arbor with a three-belt drive system powered by a 3-hp, 230-volt motor. It comes standard with a 50-in. T-square-style fence and titanium-coated cast iron wings on both sides of the table.

Source Steel City Tool Works, (615) 225-9001, www.steelcitytoolworks.com 10-in. tablesaw with titanium coating, #35630, \$1,850.



Products for

found most exciting. I'll bring you more new and cool products from IWF in future issues. You'll find many of these tools already available at your local woodworking store or online.

2007

GET THE DRIFT WITH LAGUNA'S FENCE

Laguna's DriftMaster bandsaw fence, \$295, has some innovative features. First, there's the drift adjustment on the fence.

Turning a knob on the front precisely pivots the fence slightly left and right. No bolts to loosen and tighten. Simple. Turning the handwheel left of the fence controls the fence position. This is especially handy when you're resawing thin veneers from the out-board face of a board. Simply count the number of handle revolutions and you can easily produce piece after piece that are precisely the same thickness.

The DriftMaster is designed for 16-in. and larger saws. Laguna tells us it may have a scaled down version of this cool fence for 14-in. saws available in the future. I'll let you know when I see it.

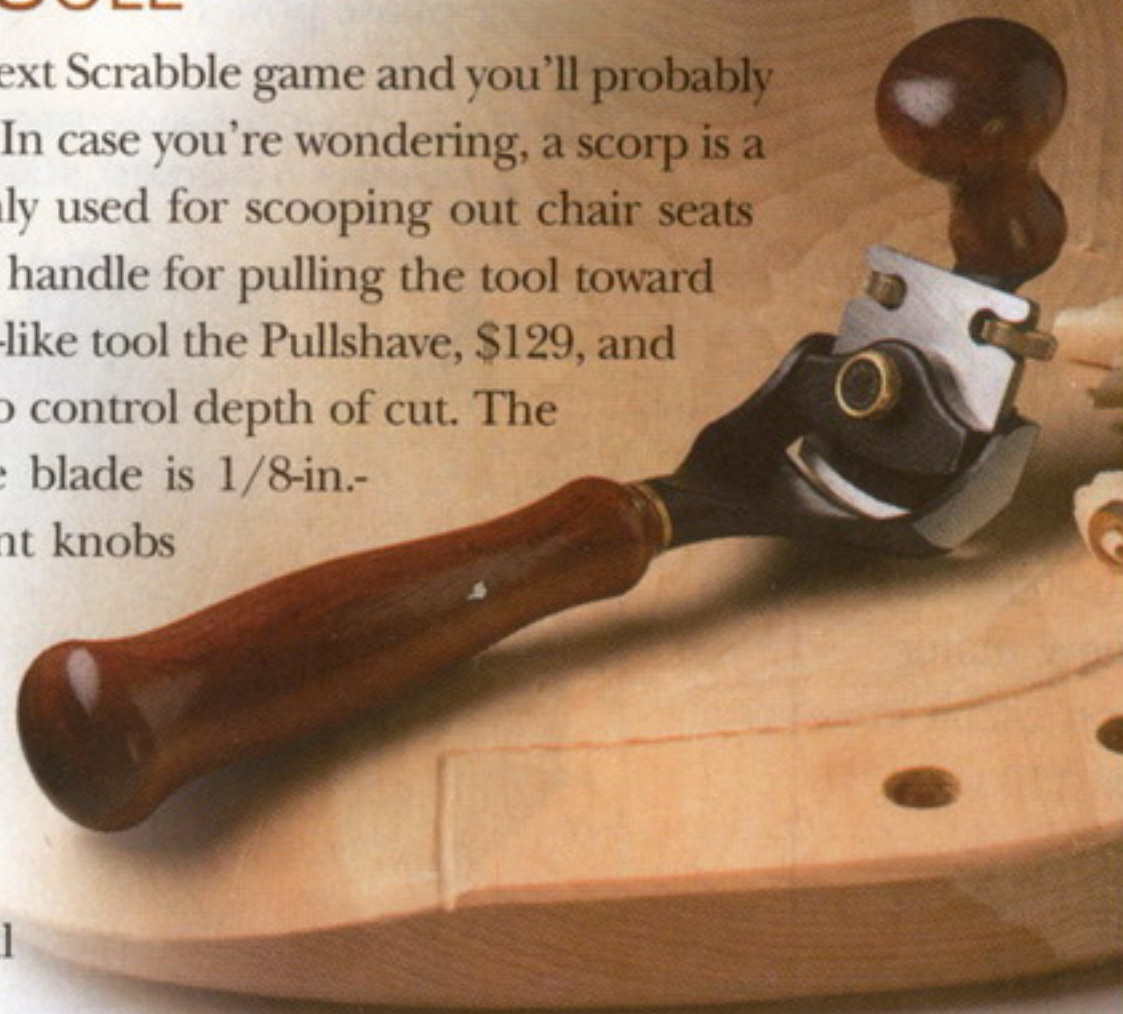
Source Laguna Tools, (800) 332-4094, www.lagunatools.com DriftMaster bandsaw fence, \$295.

SCORP WITH A SOLE

Lay down "scorp" at your next Scrabble game and you'll probably have to prove it's a real word. In case you're wondering, a scorp is a circular-shaped tool commonly used for scooping out chair seats and large bowls. It has a long handle for pulling the tool toward you. Veritas calls its new scorp-like tool the Pullshave, \$129, and has added a sole to the tool to control depth of cut. The sole's radius is 3-1/2 in. The blade is 1/8-in.-thick A2 steel. Two adjustment knobs control the depth of cut.

Beyond that, Veritas has made this a beautiful tool to look at and hold. Its handle configuration provides more control than a traditional scorp's handle does.

Source Lee Valley and Veritas, (800) 871-8158, www.leevalley.com Pullshave, #05P50.01, \$129.



ROUTER BITS FOR CROWN MOLDING

Do you need crown molding in a wood that isn't readily available? Are you driven to make every foot of your own molding for your house? No need for a molding machine.

If you've got a router table and router, Freud has you covered with its wide crown-molding router bits, about \$65 each.

According to the folks at Freud, these are the only router bits on the market

that let you make 5-1/2-in.-wide crown molding.

Somebody really had a thinking cap on to come up with this idea. Six 1/2-in. shanked bits are available: three designed to cut the top half of the molding and three designed to cut the bottom half. The top and bottom bits can be mixed and matched in any combination, so a complete set of the bits yields nine different molding profiles. The cool part is that the end of each bit, which corresponds to the center of the molding profile, contains an identical sweeping profile. This makes it very easy to transition between profiles. A light sanding is all that's required after the router table work, and you're ready for finish.

Source Freud, (800) 334-4107, www.freudtools.com Wide crown-molding router bits, #99-414 through #99-419, about \$65 ea.



Well-Equipped Shop



HAND-SIZE BELT SANDER

Every once in a while, I'd like to be able to hold my belt sander like an electric razor and shave just a little material off a hard-to-reach surface.

Porter-Cable must have read my mind. Its compact belt sander, \$119, is just the ticket for this job.

This machine uses a 2-1/2-in. x 14-in. belt and can be held in one hand or two. It's a handy tool to have on hand any time you need to go vertical, or worse, overhead with a belt sander. It weighs only 5 pounds.

The compact belt sander is powered by a single-speed (800 feet per minute) 5-amp motor. Its sides are flush so you can work right up to an adjacent surface.

Source Porter-Cable, (888) 848-5175, www.porter-cable.com
Compact belt sander, #371K, \$119.

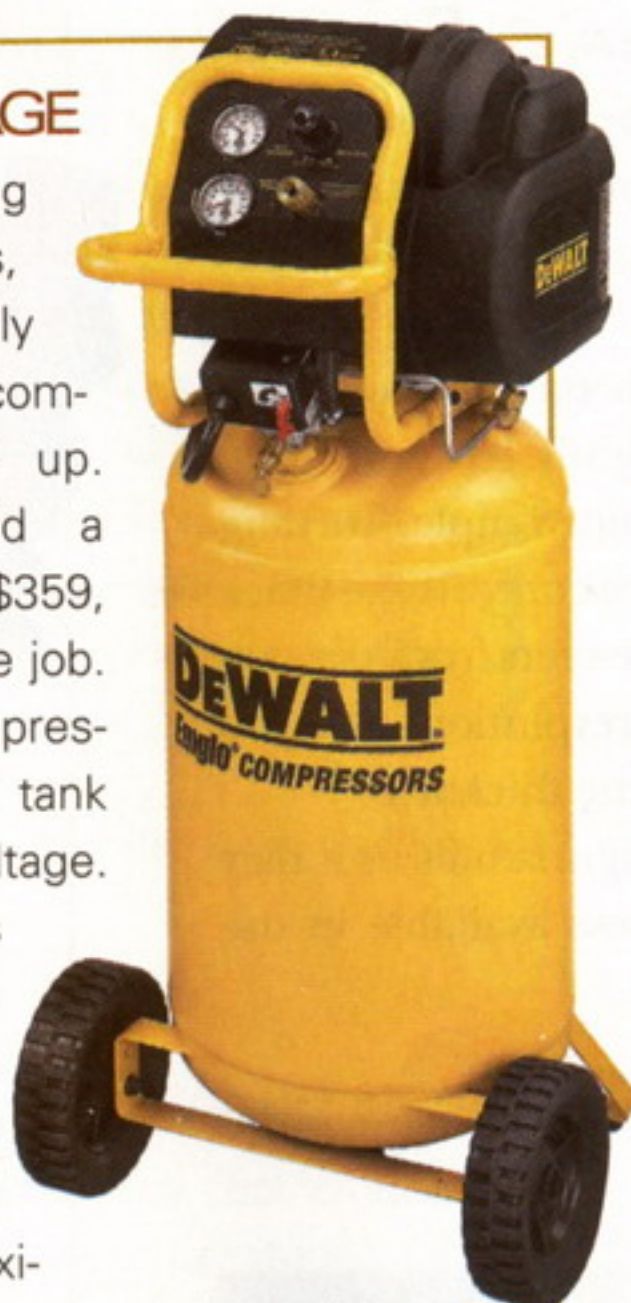
LOTS OF AIR ON SMALL VOLTAGE

Many air tools, including sanders and spray guns, gobble up air. To effectively use the tool, you need a compressor that can keep up. DeWalt has introduced a 15-gal. air compressor, \$359, that's capable of doing the job. Two aspects of this compressor are newsworthy: the tank size and the motor's voltage. According to DeWalt, this 15-gallon compressor can outperform many 25- to 30-gal. compressors. The D55168 Workshop Compressor offers a maximum pressure of 200 psi and provides 5.4 scfm at 90 psi.

Typically, compressors large enough to run high-air-consumption tools have big tanks. DeWalt used a new motor technology on this machine that allows a higher volume of air to be packed into a smaller tank. That allows tools to run longer on a given tankful of air.

Getting a compressor large enough to feed a hungry air tool usually means going to a 220-volt unit. Another benefit of the new motor technology for those without a 220-volt circuit in their shops is that this machine runs on 110 volts.

Source DeWalt, (800) 433-9258, www.dewalt.com
Workshop compressor, #D55168, \$359.



BIG TABLESAW FOR BIG WORK

If you want a tablesaw with lots of power and a 4-in. depth of cut at 90 degrees, Grizzly Industrial has the saw for you. Its 12-in. cabinet saw, remarkably priced at \$1,995, comes with a 5-hp or 7.5-hp motor. Unlike most other tablesaws on the market, this machine includes the outfeed and right side tables. No need to fabricate your own table system!

This beefy machine also has additional bells and whistles. How about a digital readout for the blade angle? No more guesstimating the position of the pointer on the angle scale. Very cool. It also comes with a nice blade guard and a riving knife, both of which come on and off the saw with the flip of a quick-release lever—simple and convenient.

The T-square-style fence capacity is 52 in. The 5-hp motor runs on 220-volt single-phase power and requires a 23-amp circuit. The 7.5-hp motor is dual voltage and requires a 19-amp circuit when wired for 220-volt or a 10-amp circuit when set up for 440-volt three-phase power.

Source Grizzly Industrial, (800) 523-4777, www.grizzly.com
12-in. tablesaw, 5-hp model, #G0605X; 7.5-hp model, #G0606X; \$1,995.



THE ROCKET RELAUNCHED

Kreg Tools has been selling its Rocket pocket-hole jig for years. At IWF 2006, the company launched a new version of the Rocket, the R3, boosted by some great enhancements.

The R3, \$45, is a great entry-level pocket-hole jig. It has

sliders that can be adjusted, tool-free, to allow you to put screw pockets in materials from 1/2 in. to 1-1/2 in. thick. Making this adjustment guarantees the screw pocket always exits through the center of the material.

The R3 also has chip-relief holes that allow the chips that result from drilling to easily exit. Less force is thus required for drilling and, according to Kreg, the drill bit will stay sharp longer.

The R3 can be secured directly to Kreg's face clamp, \$15, using the included adaptor. Leave the adaptor off and you can use any clamp to secure the R3 to your work.

The R3 jig comes in a sturdy little case that'll help you keep track of its bits and pieces. A depth gauge, used to correctly set the stop collar on the drill bit, is cleverly built into the case.

Source Kreg Tools, (800) 447-8638, www.kregtool.com Pocket-hole jig, #R3, \$45. Face clamp, #SFC, \$15.

SHARP COMPETITION

Jet is taking on Tormek head to head with its new slow-speed wet sharpener, \$300. According to Jet, its machine offers a combination of features not found on any other machine, including torque adjustment to provide consistent pressure on the drive shaft, variable speed to maintain constant rim speed on the wheel as the diameter is reduced due to wear, a 1.8-amp motor and a diameter scale to simplify keeping track of the wheel's diameter. There are 17 accessories available for this machine, so whether you've got an axe to grind or just want to sharpen chisels, Jet can help you get your edge on.

If you're in the market for a wet sharpener, this one is worth a look.

Source Jet Tools, (800) 274-6848, www.wmhtoolgroup.com Slow-speed wet sharpener, #708015, \$300.



VERSATILE SAW STAND

HTC's PM7000 is called a saw stand, but it's really more than that. It's a tool station that would be a handy addition to a small shop. This saw stand is all about interchangeability, making it the perfect stand for a variety of benchtop tools.

The PM7000, \$250, has 116 in. of overall support. The supports include solid flip stops that can be used for repetitive cuts. A storage compartment, handy for a tape measure, pencils or arbor wrenches, is built into the stand, along with a 15-amp power strip.

HTC's machine mounts, used to hold tools on the stand, easily and quickly snap on and off the PM7000, so you can change it from a miter-saw stand to a planer stand to a scroll-saw

stand in a heartbeat.

The stand comes with one pair of machine mounts. You'll need one set per tool; additional sets cost \$25 per pair.

An 8-in. wheel is built into the stand so it can be rolled, wheelbarrow style, when folded.

Source HTC Products, (800) 624-2027, www.htcproductsinc.com Saw stand, #PM7000, \$250. Extra machine mounts, PM7002, \$25 a pair.



TABLESAW FENCE CLAMP

Sometimes you just have to say, "Why didn't I think of that?" That's the case with these tablesaw fence clamps for \$20 a pair from the folks at Grip-Tite. They provide an effective way to clamp a subface to your tablesaw fence.

It's a simple idea. Drill a 1/2-in.-dia. hole in the subface and slip the clamp into the hole. Then span the clamp over the fence, tighten it and you're good to go.



Source Grip-Tite, (800) 475-0293, www.grip-tite.com
Subfence clamps, HC1 for 1- to 2-in.-wide fence, HC2 for 2- to 4-1/2-in.-wide fence, \$20 a pair.

GEORGE VONDRISKA

INVISIBLE JOINERY

The Invis System from Lamello is one of the coolest joinery systems I've ever seen. Picture this: You've got a joint to assemble and traditional means, such as dowels, biscuits or screws, won't work. Maybe it's a piece that can't be put together until the project is in place, such as components of large modular cabinets or furniture. So in your shop you install the Invis joinery components, which look like small studs, one component going into each half of the joint. When you're ready to assemble, you slip the parts together and run a magnetic actuator over the components. The magnetic field causes one part to spin and screw into the other. As they tighten, they draw the parts together. It's fast and effective, providing a tight, rock-solid joint that can also be disassembled if needed.

The two-piece components cost about \$5 each, significantly more than dowels or biscuits.

The \$500 starter kit or Duo Bundle includes both the DrillKit and KitPro installation package. The Duo Bundle also provides drilling and installation guides for the two-piece joiners, drill bits, several 8-mm and 12-mm components and the magnetic actuator.



Source Lamello, (877) 867-9019, Invis starter kit, #6100004, \$500. www.swissinvis.com

AIR-LIFT MOBILE BASE

Who doesn't like having tools mobile? A variety of problem-solving mobile bases are on the market, but General International has taken mobility to new heights with its Hoverpad. No wheels on this base. It lifts the tool on a bed of air. Even a small compressor is enough to make the Hoverpad work.

General demonstrated the Hoverpad at IWF by placing it under a very large shaper (see photo, below). With the air valve to the Hoverpad open, the shaper gently lifted off. A light push is all it took to slide the airborne machine across the floor, which must be very smooth.

Many mobile bases have swivel wheels on one end only, so you often have to seesaw your tool into position. The Hoverpad will go in any direction—forward, back, left, right, diagonal—with very little effort.

The Hoverpad, which is less than 1 in. thick, is available in two sizes: 18-in. x 24-in. for \$169 and 29-in. x 29-in. for \$249. If the pad is larger than you need, the small version can be cut down on a tablesaw to 13 in. x 19 in. without affecting its air lift system. The large one can be cut to 20 in. x 20 in. The price of the smaller Hoverpad is comparable to the price of a conventional tablesaw-sized mobile base.

Source General International, (514) 326-1161, www.general.ca
Hoverpad, 18 in. x 24 in., #10-824, \$169;
29 in. x 29 in., #10-929, \$249.



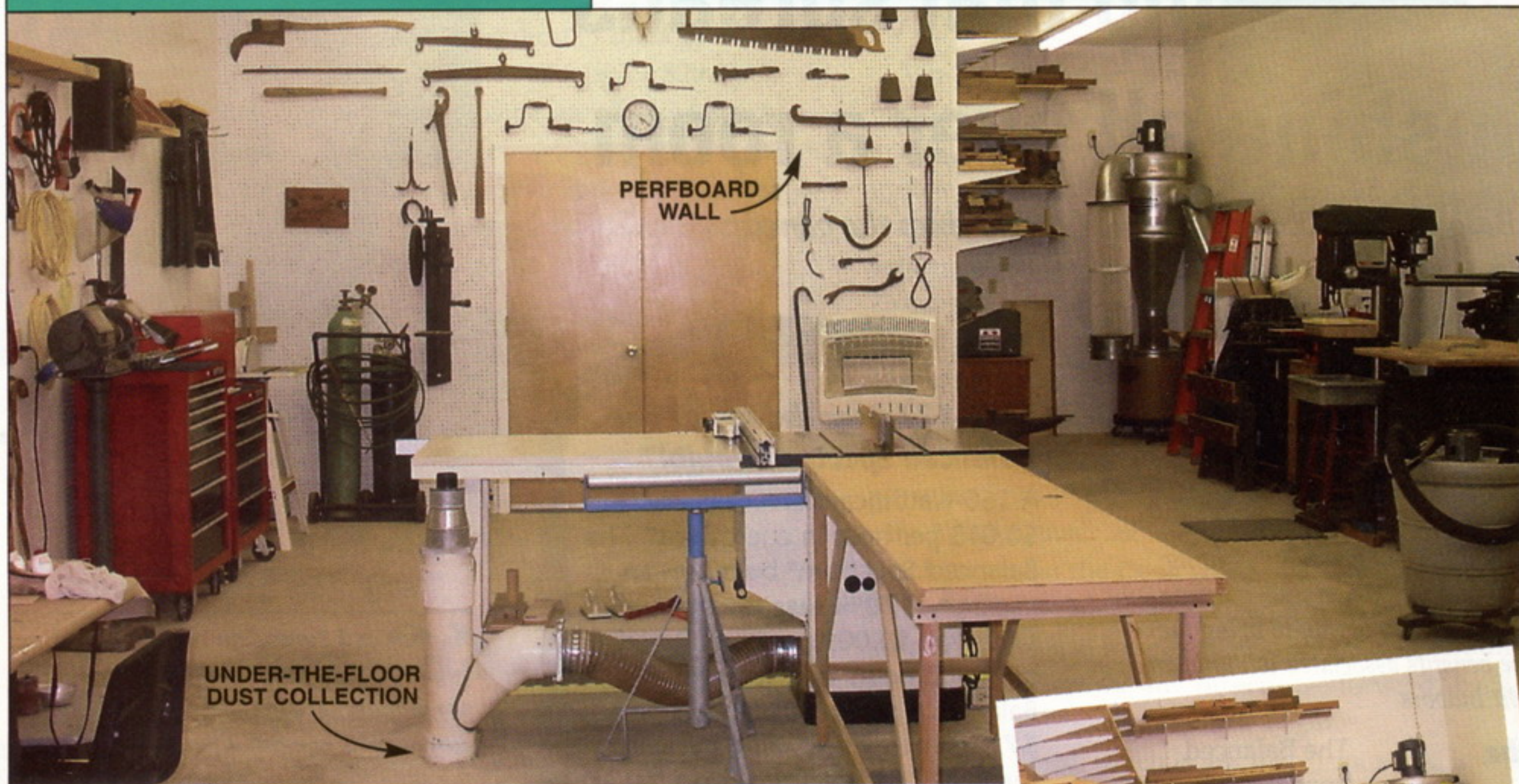
HOVERPAD'S UNDERSIDE



HOVERPAD

GEORGE VONDRISKA

GEORGE VONDRISKA



Texas-Sized Hideaway

"I'm a dust and neatness freak," admits Bob Stuckey of Anderson, Texas. "When I built my dream shop five years ago, I installed a 5-in. PVC dust-collection system under the slab floor and hooked it up to an Oneida cyclone dust collector in a back corner." Bob's an avid woodworker, but he likes a neat and tidy shop. To organize his tools, Bob covered every wall with perfboard and says, "I put up each tool when I finish using it."

Bob's got plenty of room. His shop is 28 ft. wide by 40 ft. deep with 10-ft. ceilings. "I planned it all around my Delta Unisaw," he says. And what's behind the big double doors? "That's my office and assembly room. It's full of memorabilia from my 35-year career at NASA," Bob explains. "Sometimes I just sit in there and reminisce. After all, my shop is really my home away from home."



Tell us about your shop!

Readers whose shops are featured will receive \$150. Send us photos of your shop and a description of what makes it interesting. What do you make in it, and what makes your shop important to you?

Write to **My Shop, American Woodworker**, 2915 Commers Dr. Suite 700, Eagan, MN 55121, or e-mail to myshop@rd.com. Please send prints or digital photos on a disc. Submissions cannot be returned and become our property on acceptance and payment. We may edit submissions and use them in all print and electronic media.

Hyperorganize



Your Shop

A HOOK-AND-SLAT
WALL SYSTEM PUTS
EVERYTHING AT YOUR
FINGERTIPS *by Jock Holmen*





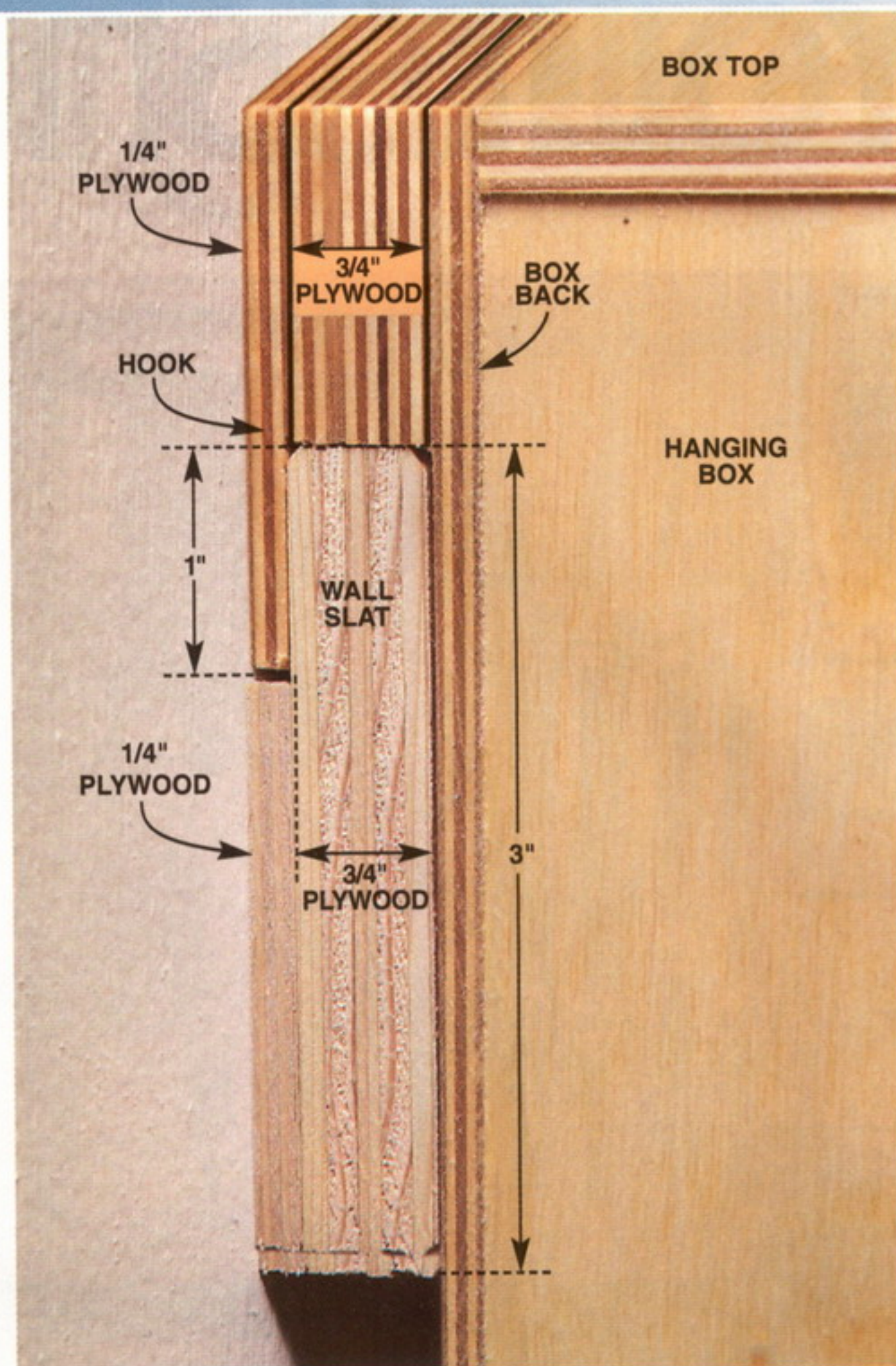
JOCK HOLMEN
"The Norwegian Termite"

I've struggled with the clutter in my small garage shop for years. Recently my neighbor remodeled his garage using a commercial wall-slat system. That gave me an idea for designing my own system. I used 1/4-in. and 3/4-in. ply-

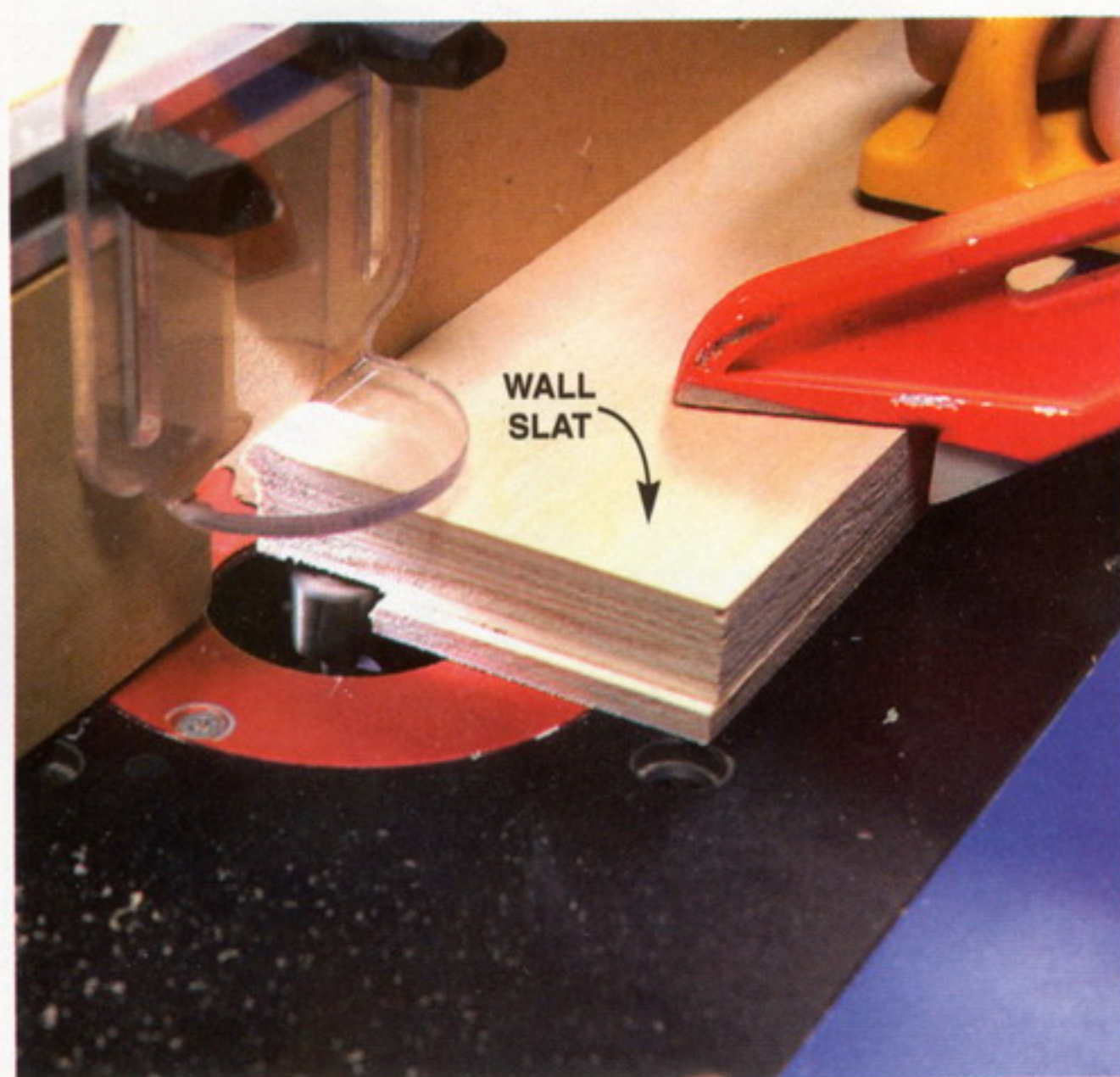
wood (Photo 1) to create a hook-and-slat system that organizes all my tools, hardware, shop supplies and hand tools. It's a flexible system that allows me to make changes easily as my shop evolves. I use the same hook-and-slat system to hang things on a roll-around cart or my bench. I even devised handles that double as hooks so I can hang individual drawers on my bench to put fasteners and hardware right where I'm working. Along the way, I added some pull-out vertical dividers with slats mounted on them. See "8 Great ideas," page 48, for all these ideas and more.

IT'S EASY TO BUILD

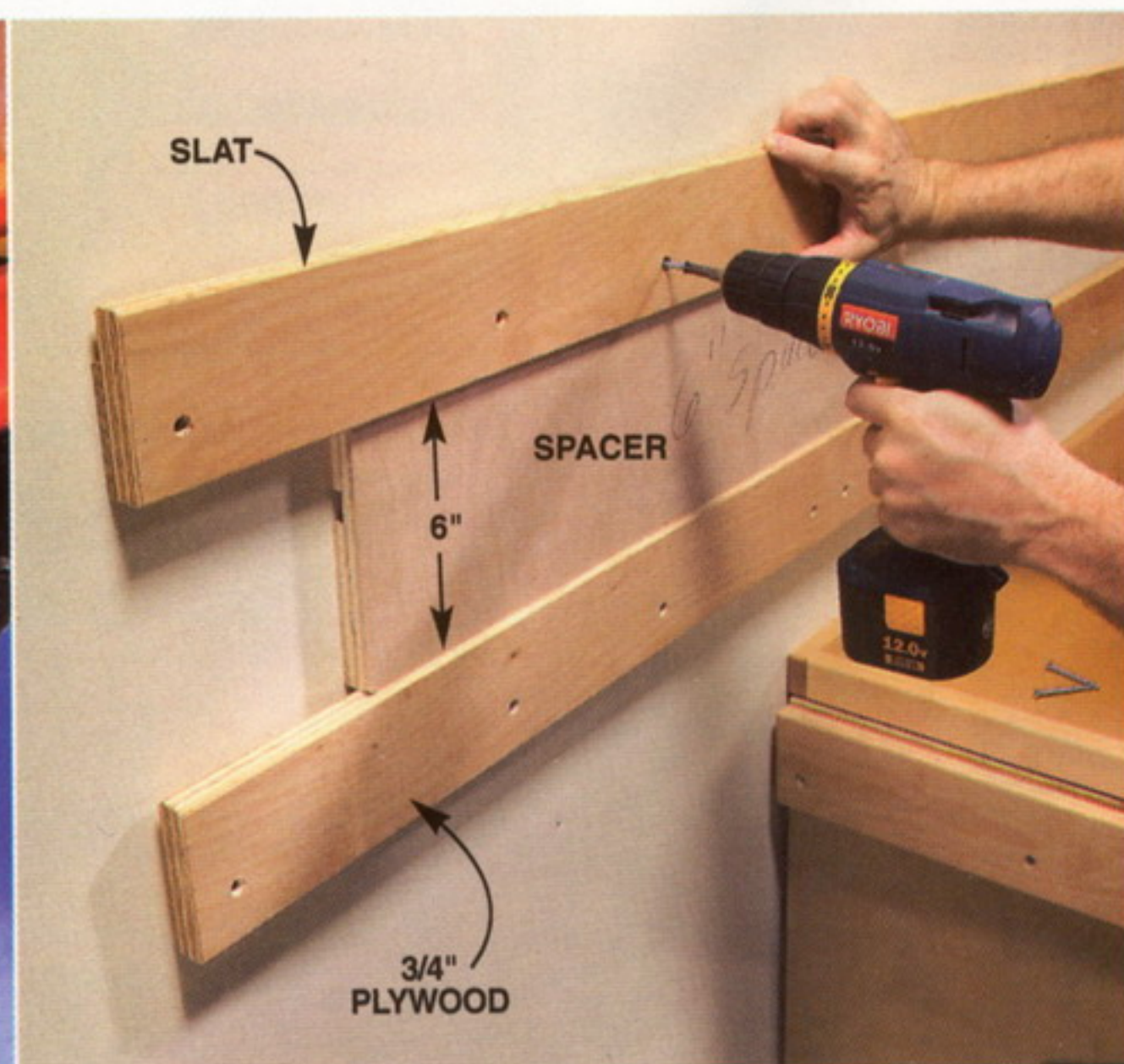
This hook-and-slat system is simplicity itself. Take a strip of 3/4-in. plywood and offset another strip of 1/4-in. plywood to create a hook and its partner, the wall slat (Photo 1). You must shave a bit off the inside edge of the slat (Photo 2) so the hook can slip in and out with ease. After I attached the slats to the wall (Photo 3) I began to invent different holders and boxes for all the tools and hardware I use frequently.



1 My entire wall system hangs on this simple hook-and-slat system. To make a hook and slat, I simply glued a piece of 1/4-in. plywood onto a strip of 3/4-in. plywood.



2 Shave the inside face of the 3/4-in. plywood for each wall slat. Remove just enough material (usually less than 1/32 in.) so the hooks slide in and out without binding.



3 I used 6-in. spacers to keep the slats parallel on the wall. To facilitate hanging the strips, I screwed 3/4-in. plywood to the studs in my garage. This allows me to install wall slats anywhere I want.

3 Big Benefits



A Place for Everything and Everything in Its Place

My system puts everything in plain view and right at my fingertips. No more fumbling in drawers or cabinets. When I'm done using a tool, it goes right back on the wall, leaving my benchtop clutterfree and ready for work.



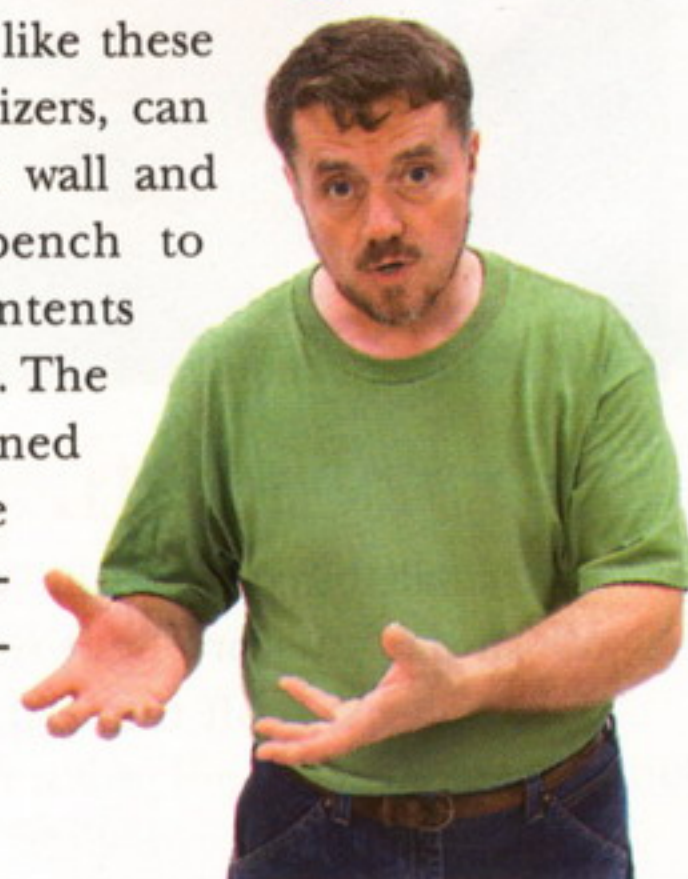
This System Can Hold a Ton—Well, Almost

Trust me—this wall system is plenty strong. The slats can hold up an entire cabinet full of tools without causing you worry.



Low Hanging Boxes Keep Benchtop Clear

All the boxes, like these sandpaper organizers, can be taken off the wall and hung on the bench to bring their contents where the work is. The boxes are designed to sit below the benchtop, leaving the top unobstructed.



8 Great Ideas



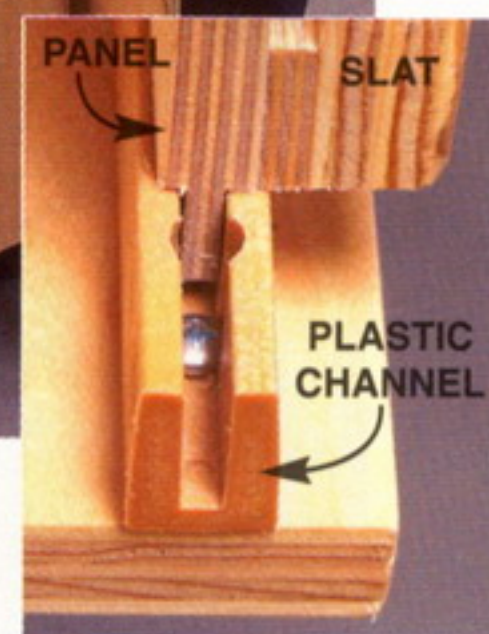
Roll-Around Cart

My roll-around cart normally lives below my bench. When I need to go mobile, it comes out of hiding, ready to be adorned with boxes and dividers that contain the tools I need for a given job. Here I'm getting the cart ready with everything I need for a glue-up.



Pull-Out Dividers

Each divider is task-oriented. This one carries adhesives, countersinks and drivers for assembly. The dividers slide on a plastic channel designed to hold lattice, available at most home centers. A 1/4-in.-wide tongue is machined on the top and bottom of each panel. Multi-ply birch plywood works best for these dividers.



Spot Lighting

A small block of wood with a hook attached allows me to put my work light right where I'm working. The light can hang off the wall, my bench or even the roll-around cart.



Hook and Handle

Even my individual screw drawers can hang on slats. That's because I designed the drawer handles just like the hooks, only smaller in scale. Pull out a drawer, turn it around and hang it on a hook—everything's within easy reach.



Hand-Plane Holder

My hand-plane holder puts all my planes within easy reach.



Hanging Tool Caddies

All my handheld power tools and their accessories have places on my wall. Individual tool caddies hold sanders with their paper, drills with their chargers and bits, and routers with their wrenches. When I need a tool, I grab its caddy and take it to where I'm working. Now I never leave a needed accessory behind.



Orbital Caddy

Hey! Check out my random-orbital sander caddy. The paper is organized with 1/4-in. plywood dividers labeled for each grit. I just lift the appropriate divider and grab the paper I want. The sander sits on top of the paper stack for transport. I put a five-degree back angle on the bottom shelf to tip the paper and sander so they don't fall out when the caddy hitches a ride on the cart.

Jock Holmen has been a master carver and woodworker for 29 years. He owns and operates The Norwegian Termite in historic Mendota, Minn.



Slide-By Panels

The slide-by panel assembly is housed by large shelves at top and bottom. I even used some of my old perfbboard to make a divider.

The slide-by panels glide along the same plastic channel used for the dividers (see "Pull-Out Dividers," page 48).

Benchtop Mortisers

New, improved features drill square holes with speed and precision.

by George Vondriska

Compared with our last Tool Test of benchtop mortisers ("Benchtop Mortisers," AW #81, August 2000, page 73), the mortise machines in this test are like a breath of fresh air. These new models feature sturdy fences that don't flex under pressure, rigid hold-downs that stay put, slow-speed motors that don't burn bits and wood, plus long handles for better leverage. Some machines have additional user-friendly features, such as tool-free adjustment, micro-adjustable fences and roller-style horizontal clamps.

In this test, I made hundreds of mortises in solid red oak. I repeatedly ran the machines through the required setup steps to identify and evaluate the best features of the group. I also enlisted the help of students from my woodworking school, who range from beginner to advanced, to help identify these features. The results of our testing should help you make an informed buying decision.

WHO NEEDS A MORTISER?

If you use mortise-and-tenon joinery in your furniture-making, a mortising machine is worth serious consideration. Mortisers shine at punching out successive, adjacent square holes to create a traditional rectangular mortise. Although there are plenty of techniques for making mortises, it's hard to beat the speed and accuracy of these dedicated machines. Unlike routed or drilled mortises, with machined mortises you won't have to round the tenon to match the mortise or square the mortise to match the tenon.

Mortise machines do require some fussy tweaks of the fence, chisel and depth stop. Some machines have features that make these adjustments quick and easy (see Chart, page 54).



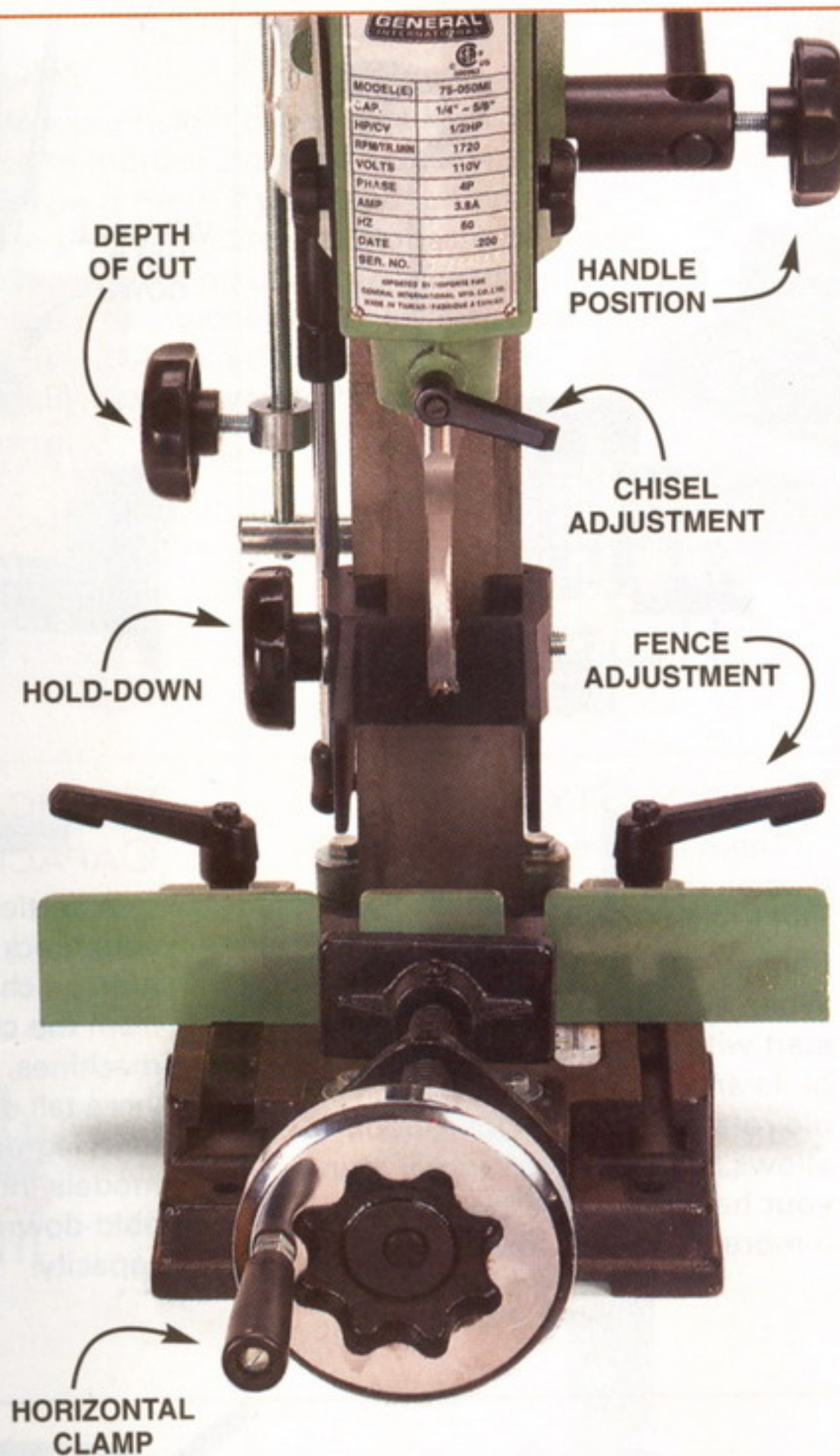
Features

TOOL-FREE SETUP

This feature is at the top of our list. All mortise machines require five operations before a mortise can be cut:

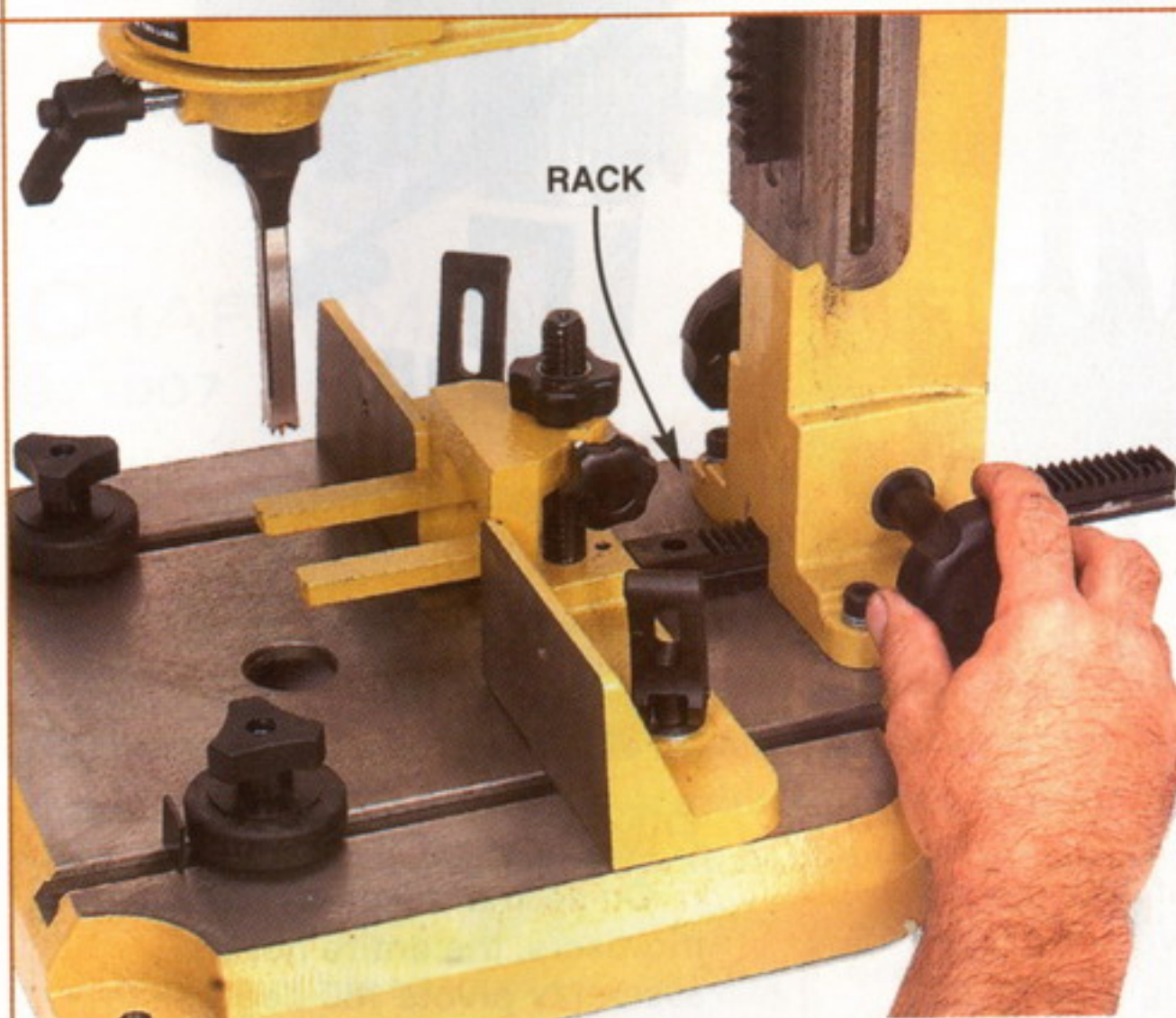
1. Install the chisel and auger.
2. Set the chisel parallel to the fence.
3. Position the fence.
4. Set the depth of cut.
5. Position the hold-downs.

Some machines are tool-free all the way (if you don't count the chuck key that locks the auger bit in place). Others require you to fuss around with an Allen wrench to make some of these basic adjustments.



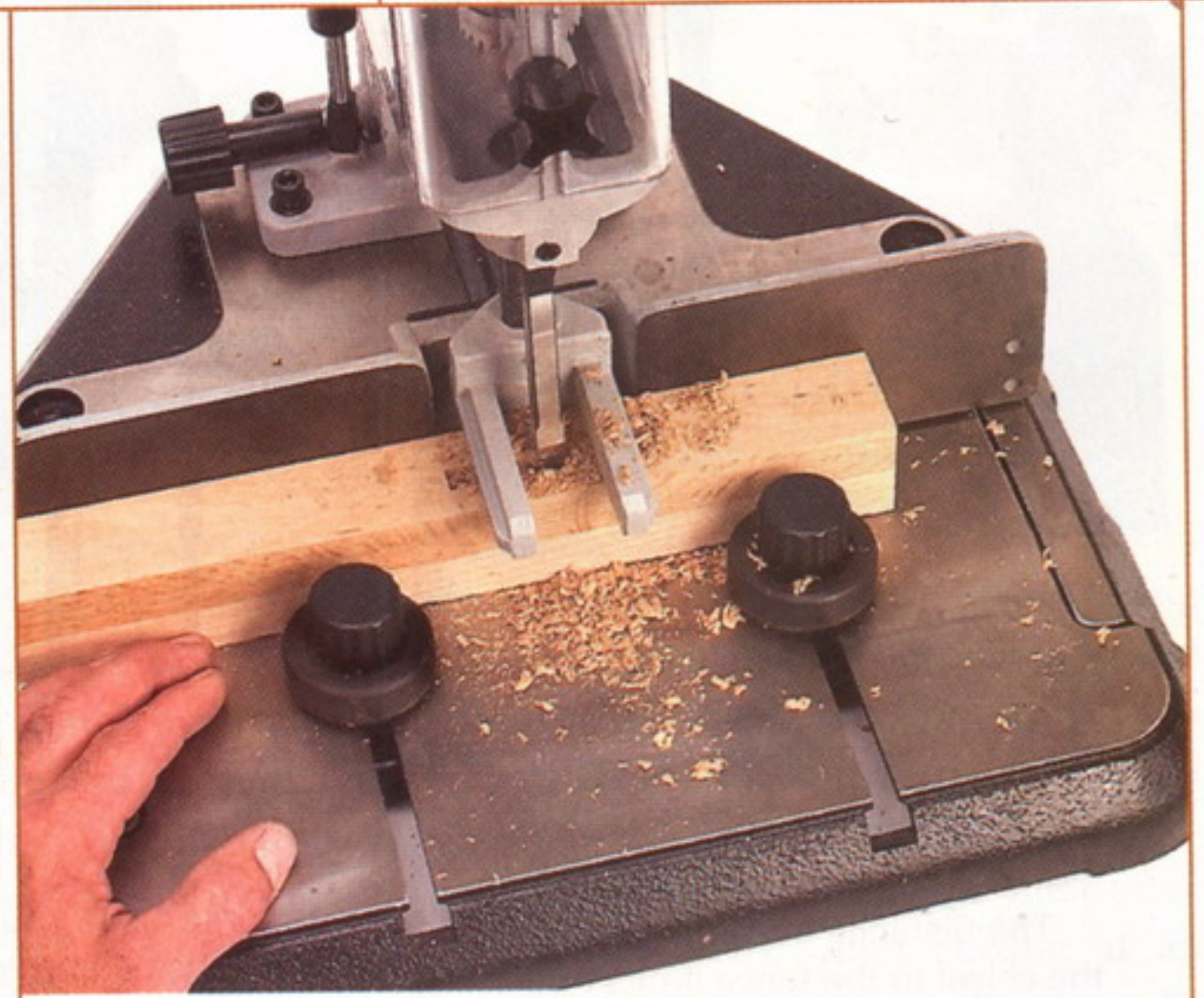
HORIZONTAL CLAMP

The roller-style horizontal clamp is one of the best innovations we found in this new generation of mortisers. There are two types of horizontal clamps: rollers or vises. We love the roller systems, because rollers provide enough pressure to secure the stock against the fence while allowing it to slide back and forth as you make successive cuts. The vise system provides plenty of holding power but needs to be tightened and loosened each time you reposition the stock.



MICRO-ADJUSTABLE FENCE

A perfectly positioned mortise requires tiny front-to-back tweaks of the fence. This is easiest on a machine that uses a micro-adjust mechanism, which is either a fine-tuning knob or rack-and-pinion system. We prefer the rack-and-pinion-style fence because it makes both coarse and fine adjustments with ease.



A WIDE TABLE

The wider the table on the machine, the better. It's just easier to rest the stock on a large table without having to worry about it tipping off. There's quite a range of table sizes on these machines—from about 7 in. to 14 in. wide. One even has pull-out extensions, providing more than 33 in. of support.

Features



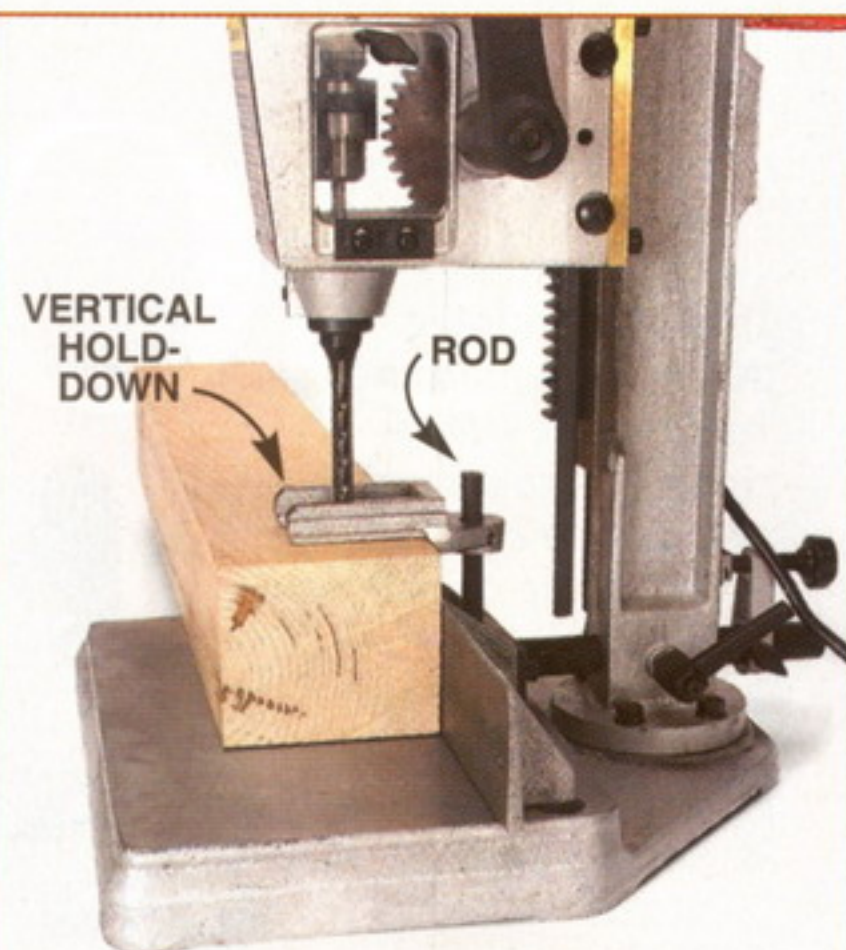
LEFT OR RIGHT HANDLE

If you're left-handed, you're probably already aware that most woodworking machines are designed for right-handed people. But there's hope for lefties in the mortiser world. A few machines we tested allow you to mount their handles on either side, a real boon to those feeling "left out."



HANDLE STYLE

There are two types of handles on these machines: straight and hooked. We prefer the hooked handle. Here's the deal: When cutting a mortise, you start with the handle at the top of its arc and finish with the handle rotated toward you. A hook allows the handle to pivot within your hand, keeping your wrist in a more natural position.



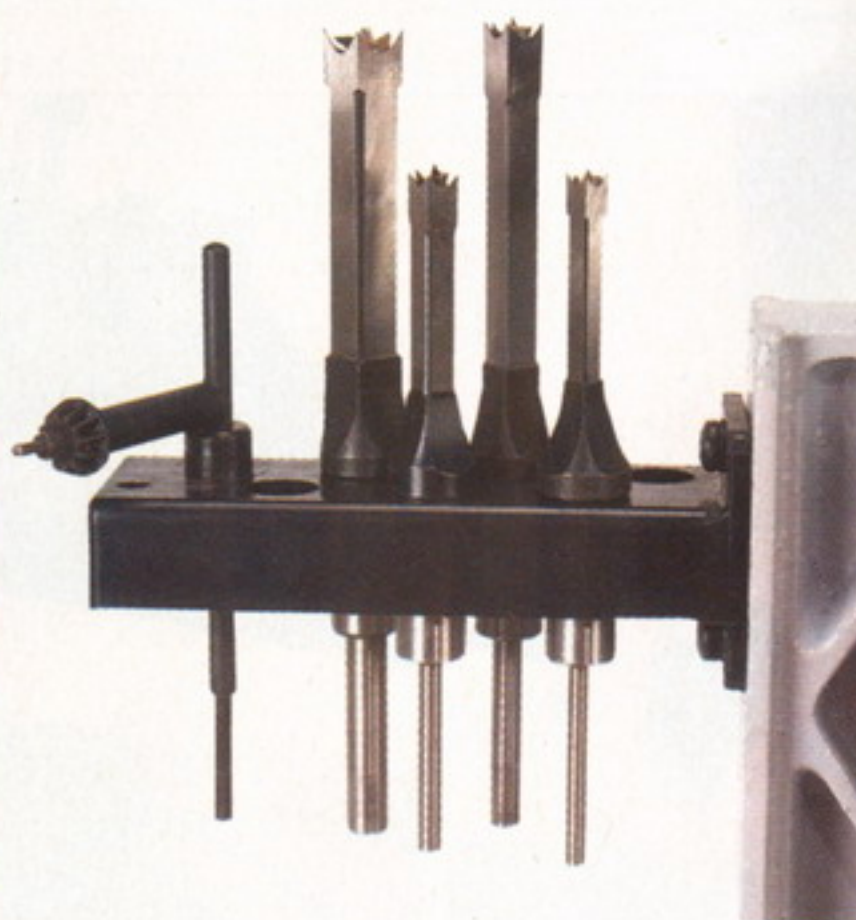
VERTICAL HOLD-DOWN CAPACITY

A vertical hold-down prevents your stock from rising with the mortise chisel as it's extracted from the cut. In the test machines, all of the hold-downs were tall enough to fit a 4-in.-thick leg underneath. Some models include an extra-long hold-down rod for even greater capacity.



CENTER-OF-CHISEL TO FENCE DISTANCE

The distance from the center of the chisel to the fence limits how far from the work's edge a mortise can be cut. All of these machines allow you to position a mortise in the center of a 3-1/2-in.-wide leg. Some have a greater capacity, which may be useful with really stout legs or timbers.



TOOL TRAY

There are lots of little pieces to a mortiser. You've got a chuck key, chisels and augers and, in some cases, Allen wrenches. A tool tray is a convenient accessory, but not necessarily a deal-breaker.



PIVOTING HEAD

On each of these benchtop mortisers, the entire head assembly pivots 180 degrees to the back of the machine. This design allows the user to mortise nearly anything, regardless of size.

Features

COLUMN EXTENSIONS

We prefer machines with extra-height capacity built in. It's pretty rare that you'd ever need to mortise stock more than 4 in. thick, but it's nice to know the option is there if you need it. Some of the machines in the test use a column extension to increase the capacity under the chisel. These are a bit of a pain to install and may have to be removed again to mortise stock narrower than 2 in. Also, some models don't offer hold-down extensions to match their increased capacity, leaving you to hand-clamp big stock to the fence to secure it.

COLUMN
EXTENSION



MOTOR SPEED

All of the machines but one have motors that run in the 1,720-rpm range. We found these low-rpm machines suffered less jamming and burning of the cutters than the old-style 5,440-rpm machines did.

Profiles



CRAFTSMAN

921907 • \$200

With one of the widest tables in the test (13-3/4 in.), this is also one of the few machines that allow the handle to be used on either side. A column extension is included for extra capacity under the chisel. The fence position can be fine-tuned with a micro-adjust knob. Unfortunately, the micro-adjust mechanism tends to interfere, making large adjustments on the fence a bit of a pain. Access to the drill chuck is tight for large fingers.

Source Craftsman, (800) 349-4358, www.sears.com

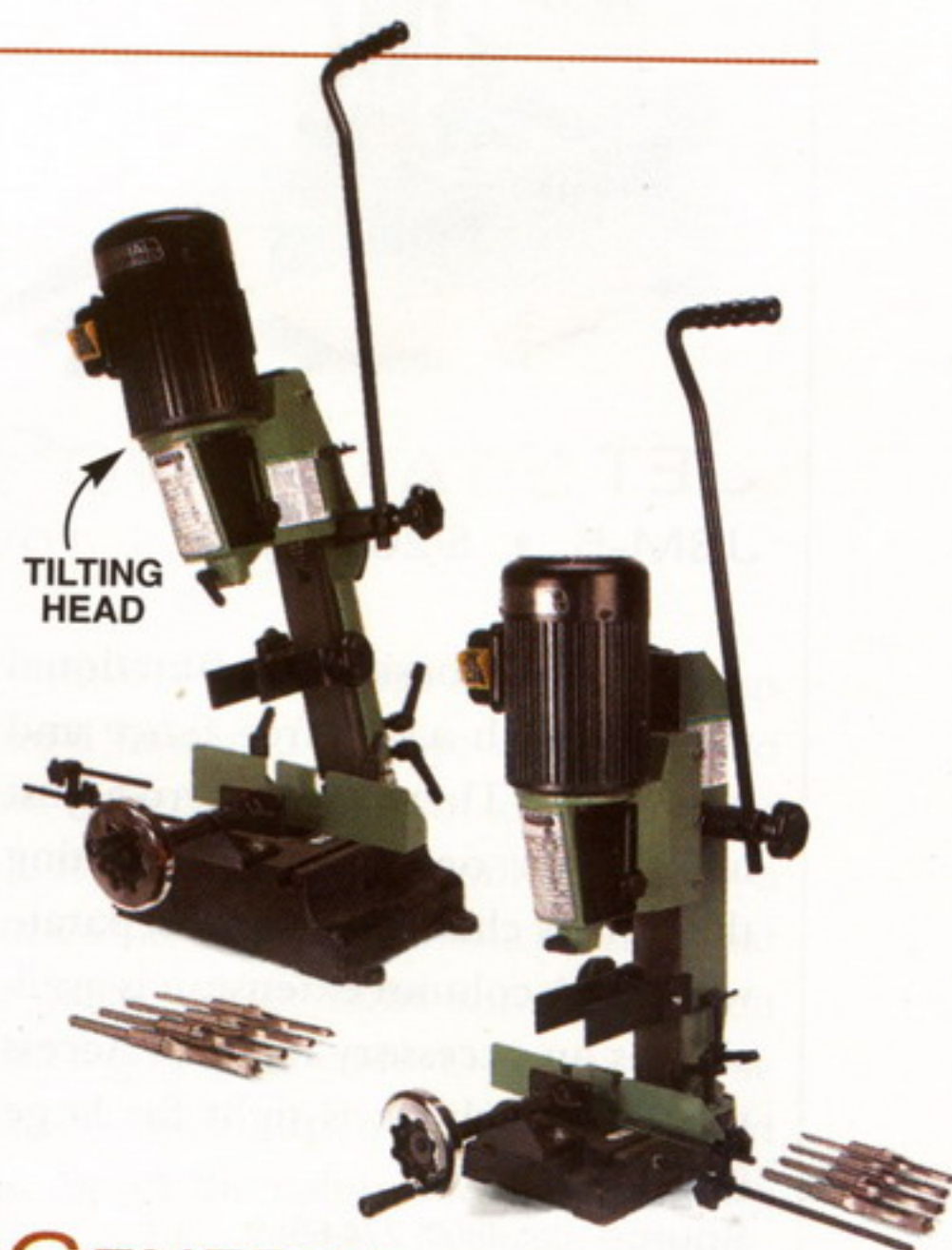


DELTA

14-651 • \$250

This machine features a rack-and-pinion fence, a wide table, a sturdy vertical hold-down, four chisels and a tool holder. Access to the chuck is good. A column extension is included for extra capacity under the chisel. The only setup function that isn't tool-free is locking the hollow chisel in place.

Source Delta, (800) 223-7278, www.deltamachinery.com



GENERAL INTERNATIONAL

75-050M1 • \$370

75-050TM1 • \$434

These General models are identical, except that the 75-050TM1 has a tilting head. Both feature tool-free setup and hooked handles. The column on the 75-050TM1 telescopes to provide an extra-large capacity under the hold-down and the required clearance above the work when cutting at an angle. The horizontal clamp really holds the stock but lacks the convenience of the roller-style system. There's no micro-adjust feature on the fence. The tables on both machines are quite narrow.

Source General International, (514) 326-1161, www.general.ca

Profiles



JET
JBM-5 • \$266

This is a basic but functional machine with a tool-free fence and hold-down. There's no micro-adjust mechanism on the fence. Setting the hollow chisel requires a separate wrench. A column extension is available as an accessory for \$20. Access to the drill chuck is tight for large fingers.

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



SHOP FOX
W1671 • \$219

This machine features a hooked handle and large capacity under the hold-down. It's the easiest machine to convert for outboard work. Rather than completely remove the bolts that hold the head to the base, you simply loosen them and pivot the head assembly.

Access to the drill chuck is tight for large fingers. This was the only machine in our test with a high-rpm motor.

Source Shop Fox, (800) 840-8420, www.woodstockinternational.com



WOODTEK
876-775 • \$263

This is another basic but functional machine. Setting the fence position is tool-free, but adjusting the hold-down and hollow chisel are not. Access to the drill chuck is tight for large fingers. There's no micro-adjust mechanism on the fence.

Source Woodtek, (800) 645-9292, www.woodworker.com

Tool Test Mortising Machines Chart

Mfr	Model	Street price	Included chisels	Tool-free setup	Micro-adjust fence & type	Horizontal clamp
Craftsman	921907	\$200	1/4", 5/16", 3/8", 1/2"	No	Yes, knob	No
Delta	14-651	\$250	1/4", 5/16", 3/8", 1/2"	No	Yes, rack and pinion	No
General Int'l.	75-050M1	\$370	1/4", 5/16", 3/8", 1/2"	Yes	No	Yes, vise
General Int'l.	75-050TM1	\$434	1/4", 5/16", 3/8", 1/2"	Yes	No	Yes, vise
Jet	JBM-5	\$266	1/4", 3/8", 1/2"	No	No	No
Powermatic	701	\$400	None	Yes	Yes, rack and pinion	Yes, rollers
Shop Fox	W1671	\$219	1/2"	No	Yes, knob	No
Steel City	25200	\$269	1/4", 5/16", 3/8", 1/2"	No	Yes, rack and pinion	Yes, rollers
Yorkcraft	YC-10BM	\$229	1/2"	No	N/A	Yes, vise
Woodtek	876-775	\$263	None	No	No	No

Recommendations



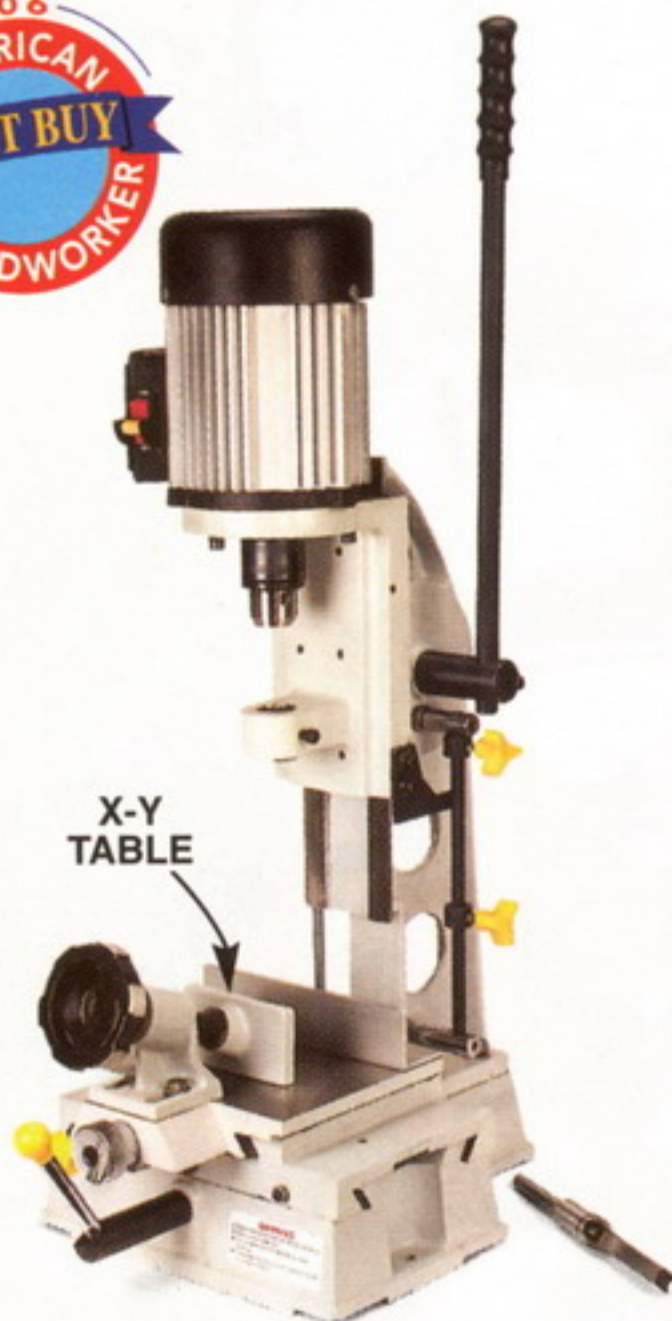
STEEL CITY

25200 • \$269

Lots of great features at a good price are what distinguish this machine. It has a big table, plus extension wings for the best work support in the field. Rollers provide horizontal holding against the fence. It has left and right handle positions and rack-and-pinion control of the fence. The chuck is easy to access for auger-bit changes. Capacity under the chisel and between the chisel and the fence are good.

Adjusting the fence is a tool-free operation, but adjusting the hold-down and locking the hollow chisel in position both require using an Allen wrench, which is included.

Source Steel City Tool Works, (877) 724-8665, www.steelcitytoolworks.com



YORKCRAFT

YC-10BM • \$229

This is the only mortiser in our test with an X-Y table, which means the entire table moves front to back and left to right. Wow, does this feature simplify mortising. The vise locks stock rigidly. The horizontal vise locks the stock onto the table so no vertical hold-down is required. A knurled knob positions the table front to back to locate the mortise. A lever in front moves the table left to right to punch the length of the mortise. Maximum capacity in the vise is 3-5/8 in. Left-to-right travel of the table is 4 in. The depth-of-cut stop tended to slip out of adjustment during use.

Source Yorkcraft, (800) 235-2100, www.wilkemachinery.com



POWERMATIC

701 • \$400

Make a laundry list of all the things you'd like in a mortise machine, and the Powermatic 701 would satisfy them all. It has a completely tool-free setup, a rock-solid rack-and-pinion fence, great capacity, left or right handle position and a good size table. One unique feature is the sharpening cone mounted on top of the column for touching up the inside of the hollow chisels. Another feature unique to the Powermatic is built-in shims. This innovation greatly simplifies the touchy task of setting the clearance between the auger bit and the hollow chisel. Chisels are not included with this machine.

Source Powermatic, (800) 274-6848, www.powermatic.com

Table width	Left/right handle	Handle style	Vertical hold-down capacity	Chisel-to-fence distance	Tool tray	Motor rpm
13-3/4"	Yes	Hooked	4-1/2"	3"	Yes	1,725
12-1/4"	No	Straight	3-3/4", 5" *	3-3/4"	Yes	1,725
7-3/8"	No	Hooked	6"	3"	No	1,720
7-3/4"	No	Hooked	9-3/4"	3"	No	1,720
13-1/2"	No	Straight	4"	3-1/2"	No	1,725
12-3/4"	Yes	Straight	5-1/4"	4-3/8"	Yes	1,725
16"	Yes	Hooked	4-1/2", 6-1/2", 8-1/2" *	3"	Yes	3,450
13-3/4", 33-3/4" w/extensions	Yes	Straight	4-3/8"	4-3/4"	Yes	1,725
7"	No	Straight	N/A, see product profile	2"	No	1,700
13-3/4"	No	Straight	3-1/2"	2-3/4"	No	1,700

*by changing hold-down rods.



7 Classic Ways To Store Clamps

by Tim Johnson

Conquer Your Clamp Conundrums with These Simple Solutions.

“You can’t have too many clamps,” a wise

cabinetmaker once told me. That’s certainly true, but in a small shop, you can easily run out of room to store them. One clamp is so different from another that no single rack can accommodate them all in a compact space. Most woodworkers benefit from a variety of storage solutions.

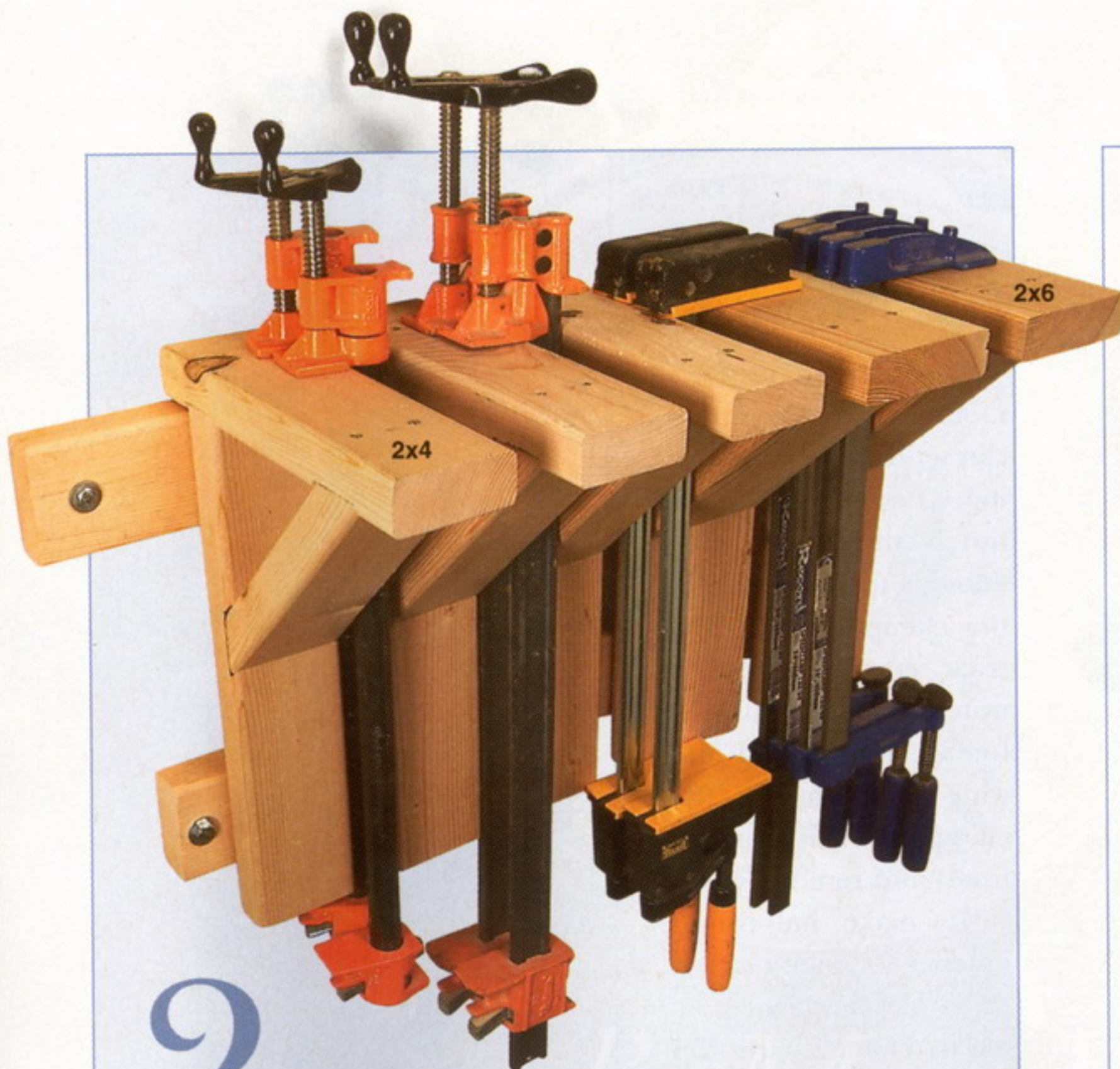
Here are seven broad concepts to stimulate your creative thinking. Each design contains one big idea tailored for a specific type of clamp. Mix and match to fit your assortment and your space. Just be sure to leave room for more!

1 Conduit Fits All the Shorties

If you have room for only one rack for your short clamps, build this one. It accommodates a wide variety of shapes—almost anything that has jaws. The rack even holds C-clamps and quick-release clamps, which usually have to be tightened to stay on a board for storage. Simply hook them over the metal conduit. Conduit is superior to using a wooden dowel rod because it is stiffer and more durable.

For most clamps, position the conduit 2 in. from the wall. Strategically locate a second length of conduit to support the bars of long clamps.





2 Make Big Brackets

These sturdy 12-in. x 16-in. brackets are great for storing lots of long, heavy clamps in a narrow space. The 2x4 brackets are wide enough for pipe and bar clamps. Use 2x6s to store K-body-style and deep-throated adjustable clamps.

Dado a 45-degree support board into each bracket. Screw the brackets to the cleats from the back, leaving 2-in. spaces between for the clamps' bars. Then fasten the brackets to the wall.



3 Throw 'Em in a Tub

Oddball clamps won't become lost if you keep them together in a utility tub, which costs about \$3 at a discount store. Tubs are a great way to store and transport spring clamps, C-clamps and small hand screws. Lidded tubs can even be stacked.

Stack 'Em Up

4

Hands down, this is my favorite way to store hand screws. Simply saw angled dadoes in one edge of a 2x4. Size the dadoes so the sticks for hanging the clamps fit tightly. Glue and screw the sticks to the 2x4 and fasten the 2x4 to the wall. This rack also works great for hanging loads of spring clamps.

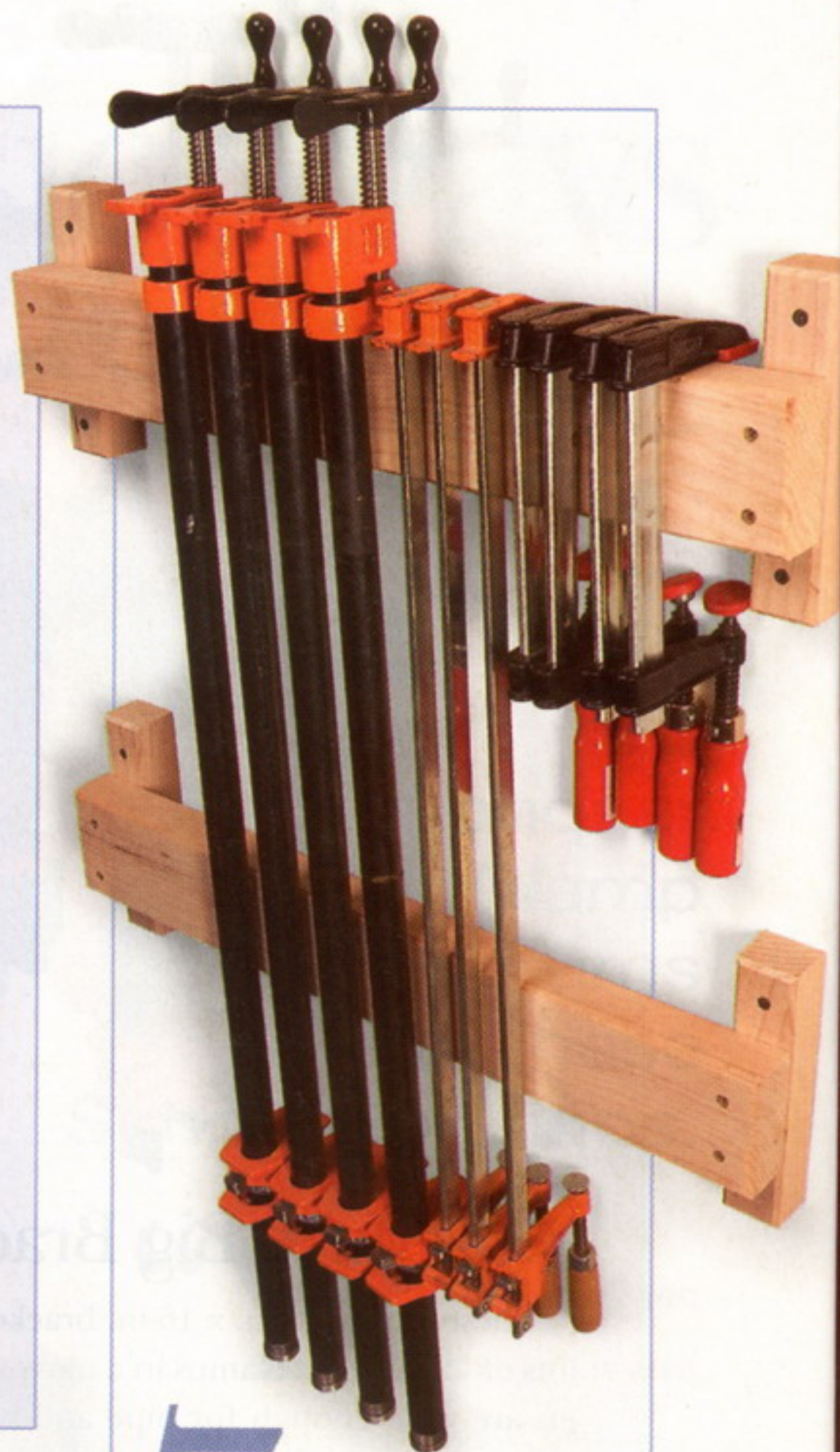




5 Cut Notches

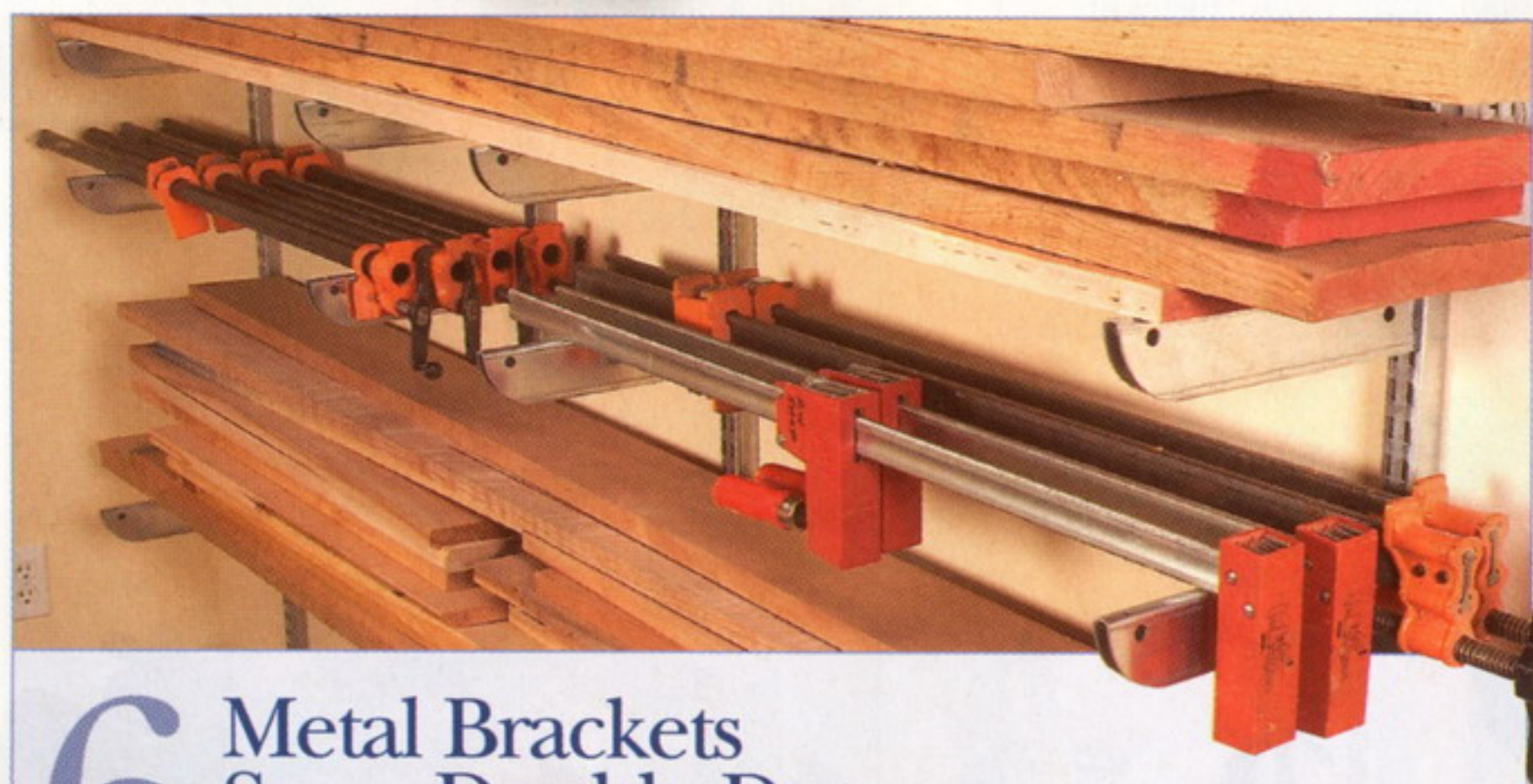
Without notches on a mobile cart, one bump can send your clamps flying. The boards that you notch should be wide enough to fully support the clamps' heads. The trick is to make the notches deep enough for a clamp's head and wide enough so the clamp's bar is easy to insert and remove.

To make half-round notches for pipe clamps, drill holes down the middle of a wide board. Rip through the center of the holes to make two support boards, each with half-round holes.



7 Add Cleats

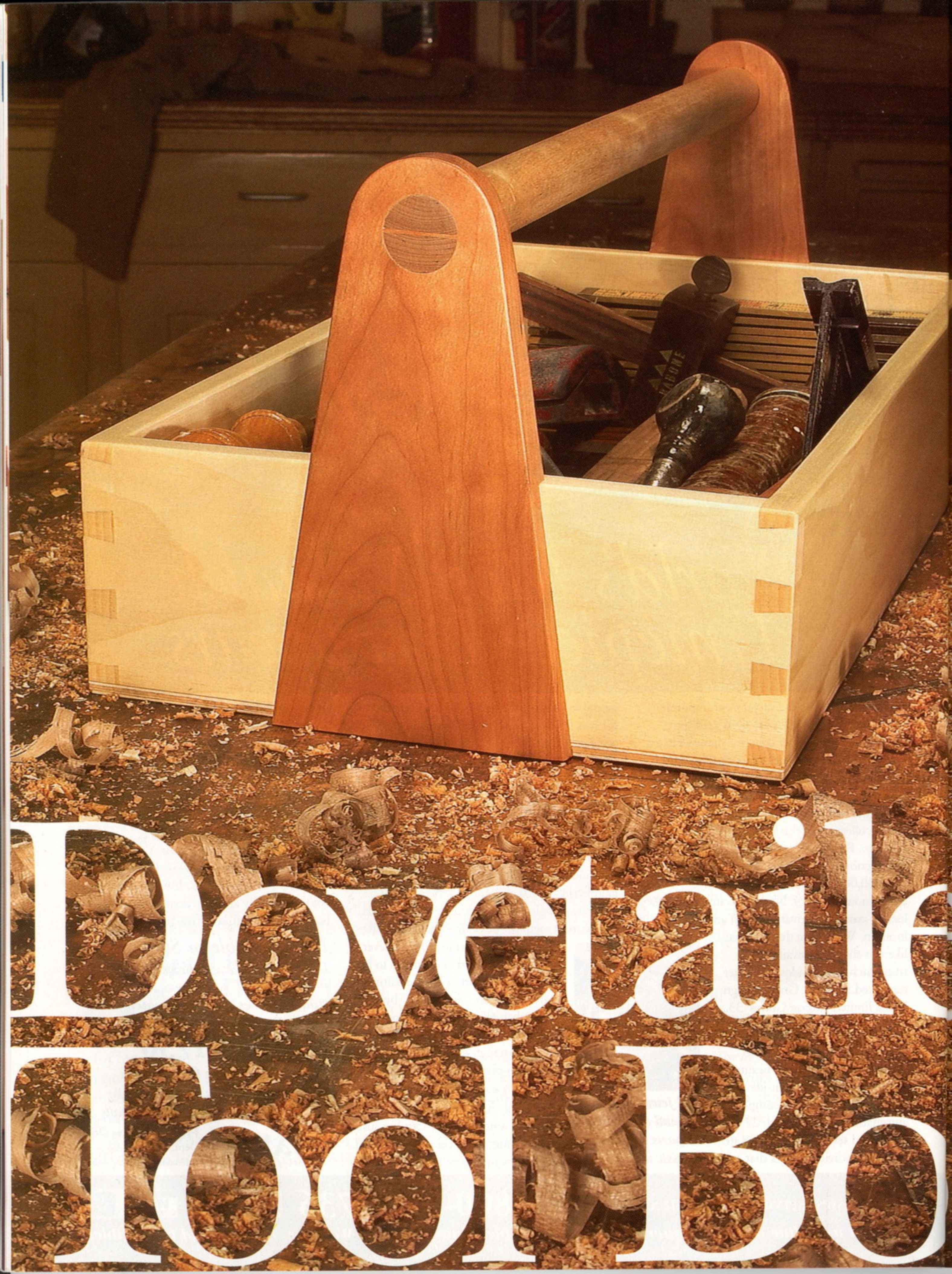
For regular pipe and adjustable clamps, storage doesn't get much easier than this. Simply fasten 2x2 cleats behind a 2x4 and fasten the cleats to the wall. The 1-1/2 in.-deep space provided by the cleats accommodates most clamp heads. Long clamps will wiggle their way off a single rack and fall, however. Install a second board below to keep them upright and stable. Clamps store compactly with this solution, but the more clamps you have, the more wall space you'll use.



6 Metal Brackets Serve Double Duty

Got long clamps you want to keep handy? Use heavy-duty 12-in. shelf brackets. (They're great for lumber, too.) This rack works well for long, heavy clamps because it stores them horizontally, making it easy to remove, use and return them. When you need one, simply pick it up and lay it down on your project. You won't have to twirl or hoist them the way you would if you stored long clamps in a vertical rack.

Heavy-duty shelf brackets are available at home centers; the slotted standards come in short lengths for a dedicated clamp rack.



Dovetailed Tool Box

Fill it, carry it, bang it around: These joints will last forever.

by Seth Keller

A lightweight, sturdy toolbox is perfect for odd jobs around the house. Carpenters used to make their own, just nailed together. I've built a more sophisticated design using two different dovetail joints.

The corners of my toolbox are held together with through dovetails. The cherry handle supports are dovetailed, too, but this joint is more subtle. It's a huge tapered, sliding dovetail. (Fig. A, Detail 2, page 62). To make this joint, I used a special dovetail bit and a shop-made jig. The jig is so simple that I can guarantee you'll get a perfect fit right off the bat.

TOOLS AND MATERIALS

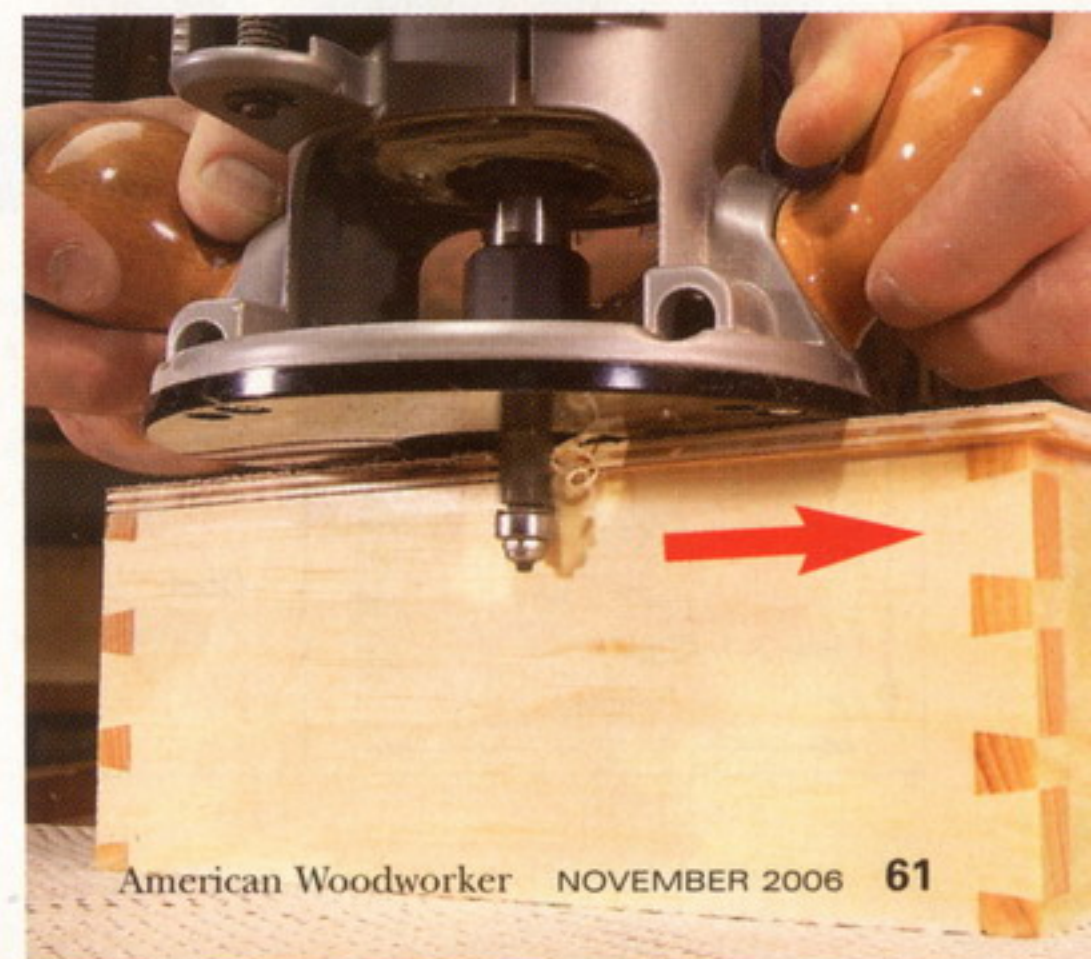
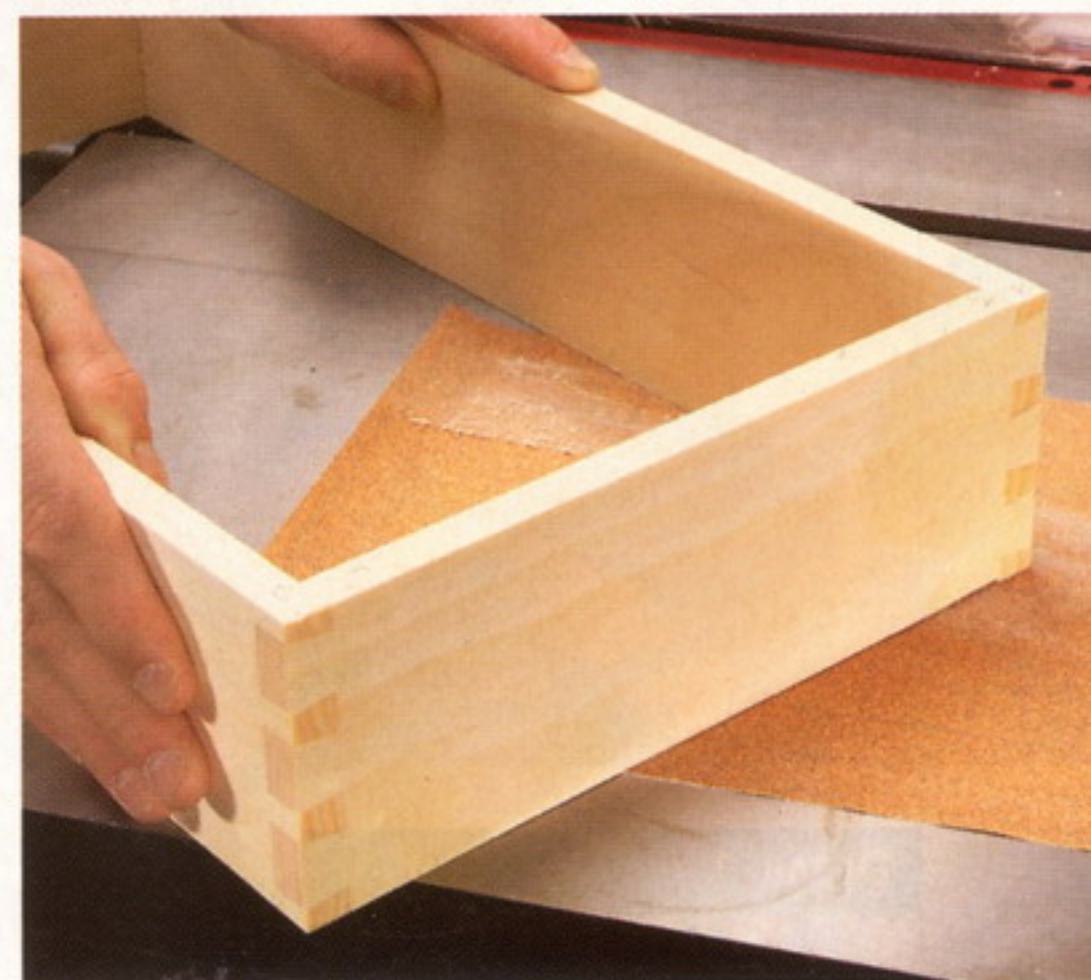
You can make this box with many different dovetail jigs. I used a Keller (no relation!) through-dovetail jig for the corners (see Sources, page 65). Other through-dovetail jigs will work, but you may have to change the width of the box's sides for the spacing between the pins and tails to look good. You can also use a half-blind dovetail jig, the kind widely used for making drawers. If you do, you might have to increase the thickness of the sides and ends to accommodate the dovetails' length.

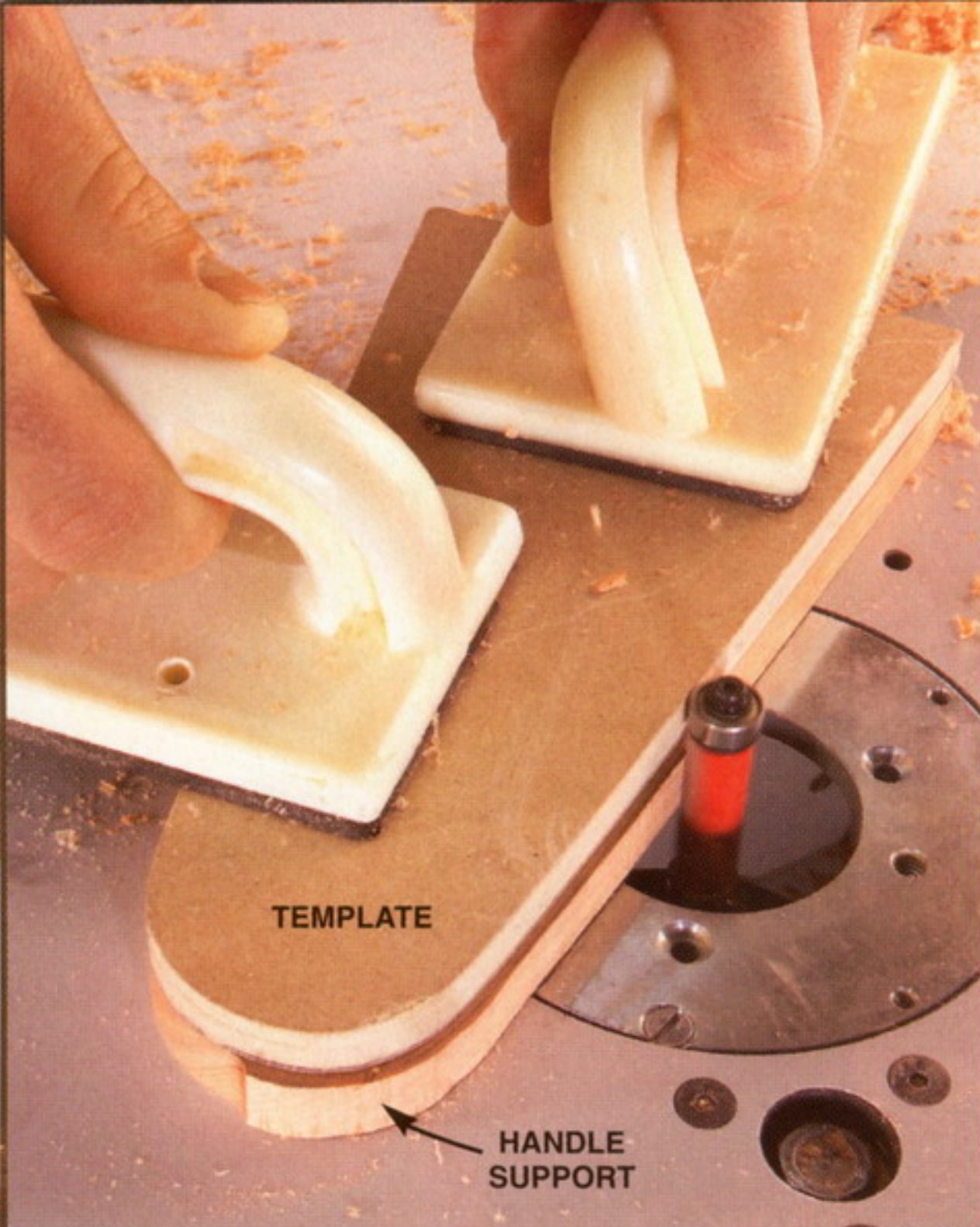
I used white pine for the sides; it's lightweight and easy to sand. I used cherry for the handle supports because it's stronger and contrasts nicely with the pine.

1 Rout dovetails on the box's sides. You can use a through-dovetail jig, as shown here, use a half-blind jig or cut them by hand. Corner joints don't get any stronger than this!

2 Sand the box's edges on a flat surface to make them flush. Use double-faced tape to hold the sandpaper. When the sides are flush, glue on a slightly oversized plywood bottom.

3 Rout the bottom with a flush-trim bit to make it even with the sides. Move the router counterclockwise for the best control.





TWO-BEARING
FLUSH-TRIM BIT

4 Shape the handle supports with a template. I use a two-bearing flush-trim bit (see photo, right), which makes it possible to cut with the grain on both sides of this piece. It's a neat trick. I shape one side with the template down, using the top bearing, and the other side with the template up, using the bottom bearing.



DOVETAIL THE BOX

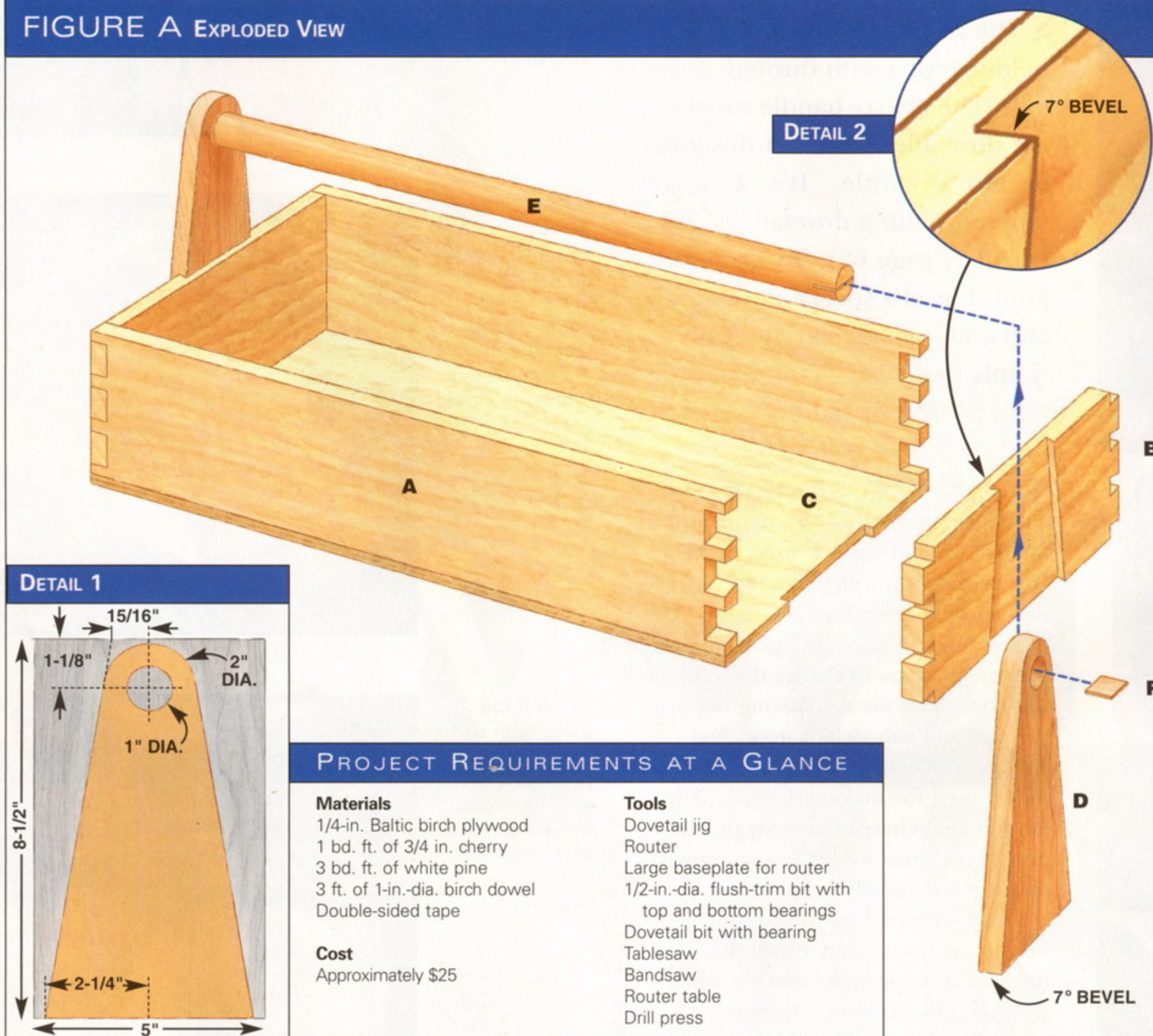
1. Mill the sides (A) and ends (B) to final dimensions (see Cutting List, page 65).

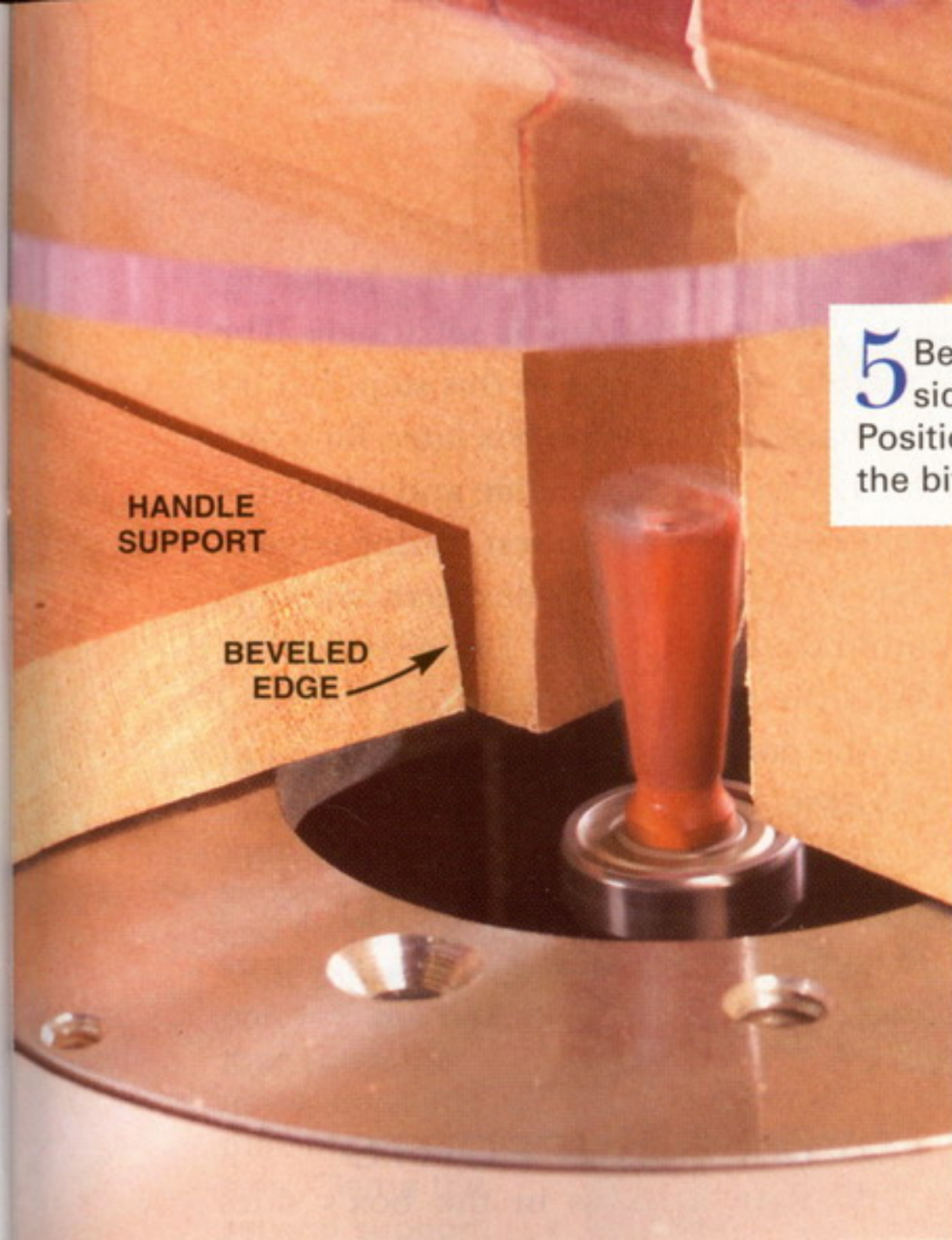
2. Dovetail the corners (Photo 1). Glue the box together.

3. Even the box's top and bottom edges with 150-grit sandpaper (Photo 2). Use the same method to level the dovetails.

4. Cut the bottom (C) slightly oversize and glue it to the box. Use three or four clamps per side to ensure a tight fit. When the glue is dry, use a router to trim the bottom flush with the sides (Photo 3).

FIGURE A EXPLODED VIEW





5 Bevel the handle support's sides with a dovetail bit. Position the fence flush with the bit's lower edge.



6 Build a jig to cut a large dovetailed recess for the handle supports. Begin by clamping two shop-made brackets flush to the box. They'll support the jig's angled parts. Mark a centerline on the bottom bracket.

MAKE THE HANDLE SUPPORTS

5. Mill the handle supports (D) to rough dimensions.

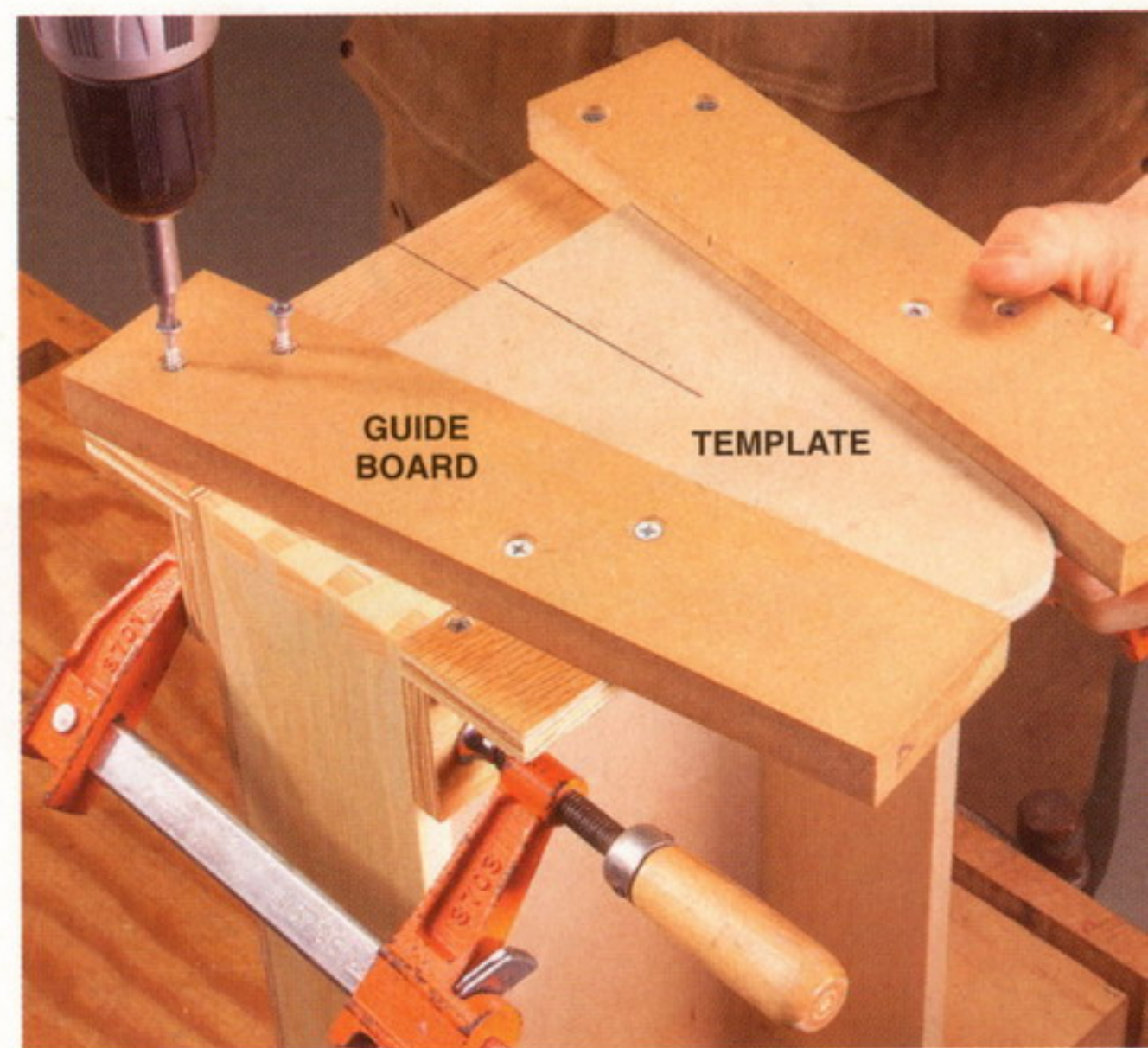
6. Make a template (Fig. A, Detail 1, page 62) for the supports. I use 1/2-in. MDF for router templates, but plywood works fine, too. Cut the angled lines on the template with a bandsaw or jigsaw, and then straighten the edges with a sanding block or file. Trace the template onto the supports. Cut 1/16 in. outside the line with a bandsaw or jigsaw. Affix one support to the template with double-faced tape.

7. Shape the support on a router table (Photo 4). Tear-out can be a real problem on the rounded end of this piece. With a standard flush-trim bit, you'd cut with the grain on one side of the piece and against the grain on the other side, risking tear-out. The best solution is to use a flush-trim bit that has two bearings: one bearing above the cutter and one below (see Sources, page 65).

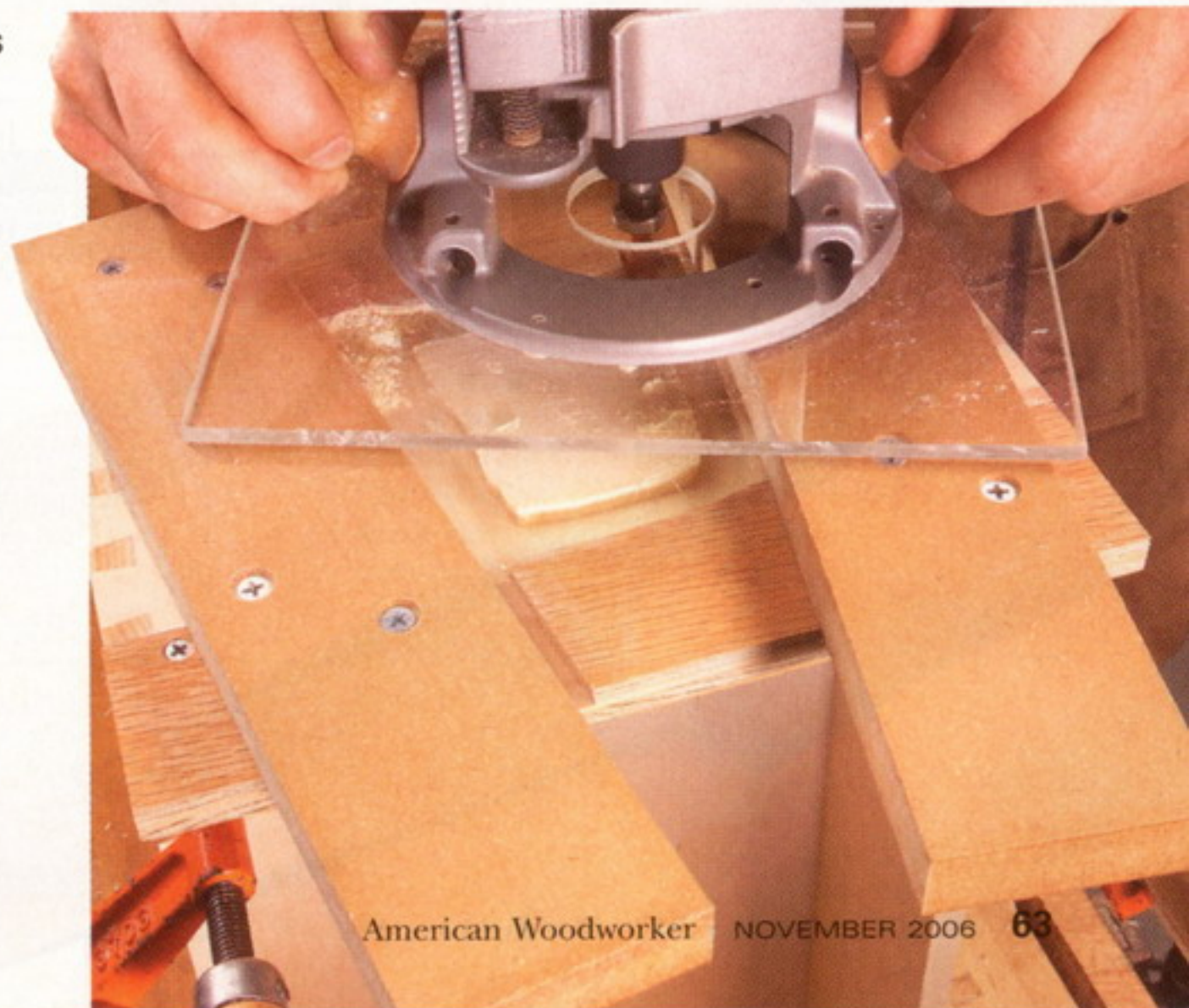
Use the top bearing to rout the support's left side, as shown in the photo. To rout the other side, flip the support and template. Raise the bit so the bottom bearing rides against the template, which is now underneath the support, and complete the routing.

8. Bevel the supports' sides using a dovetail bit with a bearing (Photo 5). I

7 Align the handle support's template with the bracket's centerline and flush with the box's bottom. Butt two guide boards to the template. Fasten the boards to the brackets.

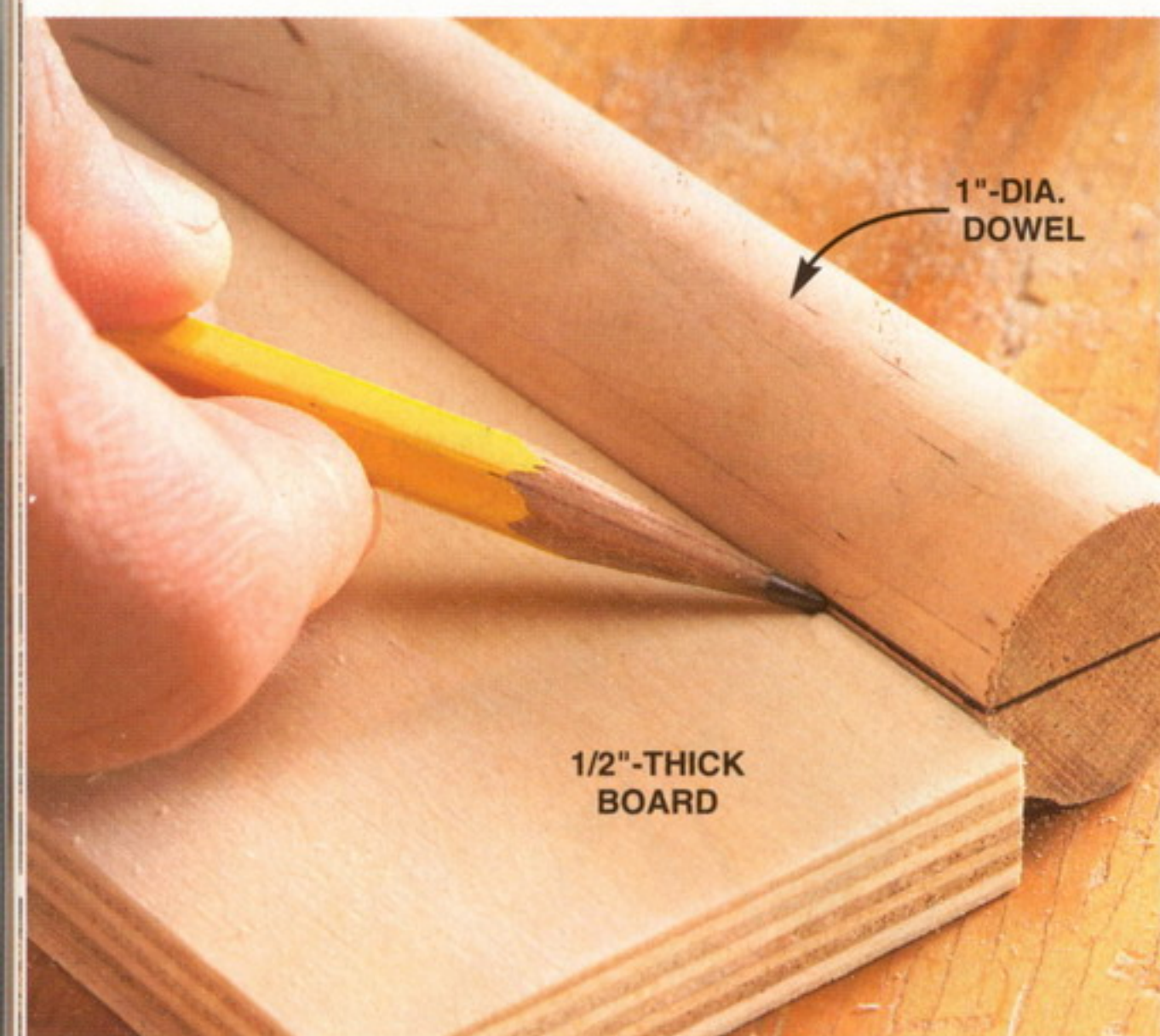


8 Rout a recess with the dovetail bit you used to bevel the supports. This bit's bearing follows the guide boards. Bridge the boards with a large baseplate.





9 Slide a support into the recess as far as it will go. Mark the overhang and trim the waste on the tablesaw using a miter gauge.



10 Mark centerlines on both ends of the box's handle, a large dowel. Guide the pencil with a board whose thickness is half the dowel's diameter. Saw the line to make a kerf that will receive wedges.



11 Taper both ends of a long, thin piece of wood to make two wedges.

use the bit that comes with the Keller jig, but you can also buy it separately. The bearing isn't needed in this step, but it's crucial for routing the box later. Raise the bit 1/2 in. above the table and adjust the fence even with the lowest cutting edge of the bit. Bevel both sides, but don't go around the top end. Leave it square. Sand the small transitions from the sides to the top end so these aren't abrupt changes.

9. Drill a 1-in.-dia. hole in the support (Fig. A) to receive the handle (E). Use a Forstner bit to make a clean, accurate hole.

FIT THE HANDLE SUPPORTS

10. Rout a recess in the box's sides using the dovetail bit with a bearing from Step 8. This recess will have beveled edges to match the supports. This step requires a jig, which you'll make in stages. To begin, build two brackets from 2-in.-wide material and clamp them to the box (Photo 6). Don't put any screws in the bracket's middle because you will be routing through this section.

11. Mark a centerline on the bracket attached to the box's bottom. Clamp the box to your bench. Align the support's template on the centerline, even with the box's bottom.

12. Glue and screw two guide boards (G) to the brackets (Photo 7). Rout a 1/4-in.-deep recess all the way across the box's end using the same dovetail bit you used for the supports (Photo 8). Remove the jig, clamp it to the box's other side, and rout a second 1/4-in.-deep recess.

13. Push each handle support into its recess and mark the excess length (Photo 9). Adjust your tablesaw's miter gauge to approximately 9 degrees and trim the supports. Slide the supports back into the box.

MAKE THE HANDLE AND WEDGES

14. Measure the distance between the outer faces of both supports. Cut the handle (E) to this measurement. Mark centerlines on both ends of the handle (Photo 10).

15. Bandsaw 1/2-in.-long kerfs on the centerlines using a fence and a V-block to

12 Glue and clamp one handle support to the box. The next step is a bit tricky: Slide the dowel through the other support so that its end sticks past the hole. Slide the support into the box, then push the dowel back into the hole on the far side. Clamp the second support.



support the dowel. Test the fence setting with extra dowel stock before cutting the handle.

16. Mill a blank for the wedges (F). It should be about 1/32 in. thicker than the saw kerf. It's safer to rip this piece from the left side of a board rather than to set your fence a very short distance from the blade. Sand 1/2-in.-long tapers on both ends of the blank (Photo 11). Crosscut the wedges by hand or by using the band-saw.

ASSEMBLE THE SUPPORTS AND HANDLE

17. Glue the supports and handle (Photo 12). Make sure the handle's saw kerfs are horizontal.

18. Drive in the handle's wedges immediately after assembling the supports (Photo 13). Sand or plane flush the handle's ends and supports after the glue is dry.

19. Sand and finish the entire box.

Sources Freud Inc., (800) 334-4017, www.freudtools.com Top-and-bottom-bearing straight (flush-trim) bit, 1/4-in. shank, #50-501, \$31; 1/2-in. shank, #50-509, \$41. • MLCS, (800) 533-9298, www.mlcswoodworking.com 7-degree x 7/16-in. x 3/4-in. dovetail bit, #5632, \$26. • Woodcraft Supply, (800) 225-1153, www.woodcraft.com 1-in.-dia. birch dowel, 36 in., #50D05, \$4. Acrylic plastic for router subbase, 12 in. x 12 in., #16L71, \$13. • Keller & Co., (800) 995-2456, www.kellerdovetail.com Journeyman dovetail jig with bits, #1500, \$150. Dovetail bit with guide bearing only, #1533, \$36.

13 Tap the wedges home. The wedge must run at a right angle to the support. If it were to run the other way, following the support's grain, the wedge's force could split the wood.



CUTTING LIST

Overall Dimensions: 8"H x 18-1/2"W x 10"D

Part	Name	Qty.	Material	Th x W x L
A	Side	2	White pine	1/2" x 18" x 3-1/2"
B	End	2	White pine	1/2" x 10" x 3-1/2"
C	Bottom	1	Baltic birch	1/4" x 10" x 18" ^a
D	Handle support	2	Cherry	1/2" x 4-1/2" x 8" ^b
E	Handle	1	Birch dowel	1" dia. x 18-1/2"
F	Wedge	2	Cherry	1/16" x 1" x 1/2" ^c
G	Guide board	2		3/4" x 3" x 12"

a Oversize dimension: 1/4" x 10-1/8" x 18-1/8"

b Oversize dimension: 1/2" x 5" x 8-1/2"

c Make from 12"-long blank

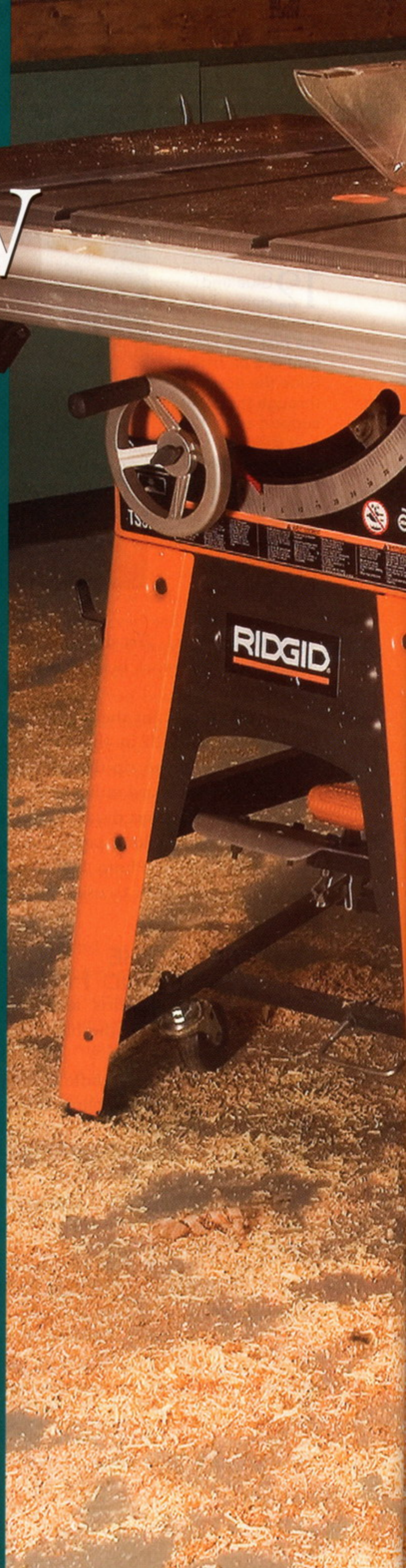
Tablesaw Storage Cabinet

All of your
tablesaw accessories
close at hand

The last time I could find them all, I counted 18 accessories for my tablesaw. Dado set, push sticks, throat plates, extra blades, miter gauges, tenoning jig, wrenches, etc.—they're all essential and they were all over the place. The problem is finding a convenient, central place to put them that's out of the way yet accessible.

I came up with a cabinet that fits in the underutilized space below my saw's extension table. It has two deep drawers for plenty of storage. The full-extension slides and stepped sides allow you to see and grab what you need without digging through stuff. Adjustable shelves on the side hold the rip fence, extra miter gauge and whatever else you can pile on them. The overall design is flexible and open-ended, so you can add extra holders and pegs wherever you need them. I made this cabinet to fit my tablesaw, but it can easily be modified to fit most other brands.

by Eric Smith





PROJECT REQUIREMENTS AT A GLANCE

Materials

- Two sheets of 3/4-in. birch plywood
- 38 ft. of 1/4-in. x 3/4-in. birch edging

Hardware

- Two pairs of 28-in. full-extension drawer slides
- Four 3-in. casters, two locking swivel and two fixed
- Two heavy-duty standards with four shelf supports
- Two drawer handles

Tools

Tablesaw, miter saw, drill

Cost \$150

FIGURE A EXPLODED VIEW

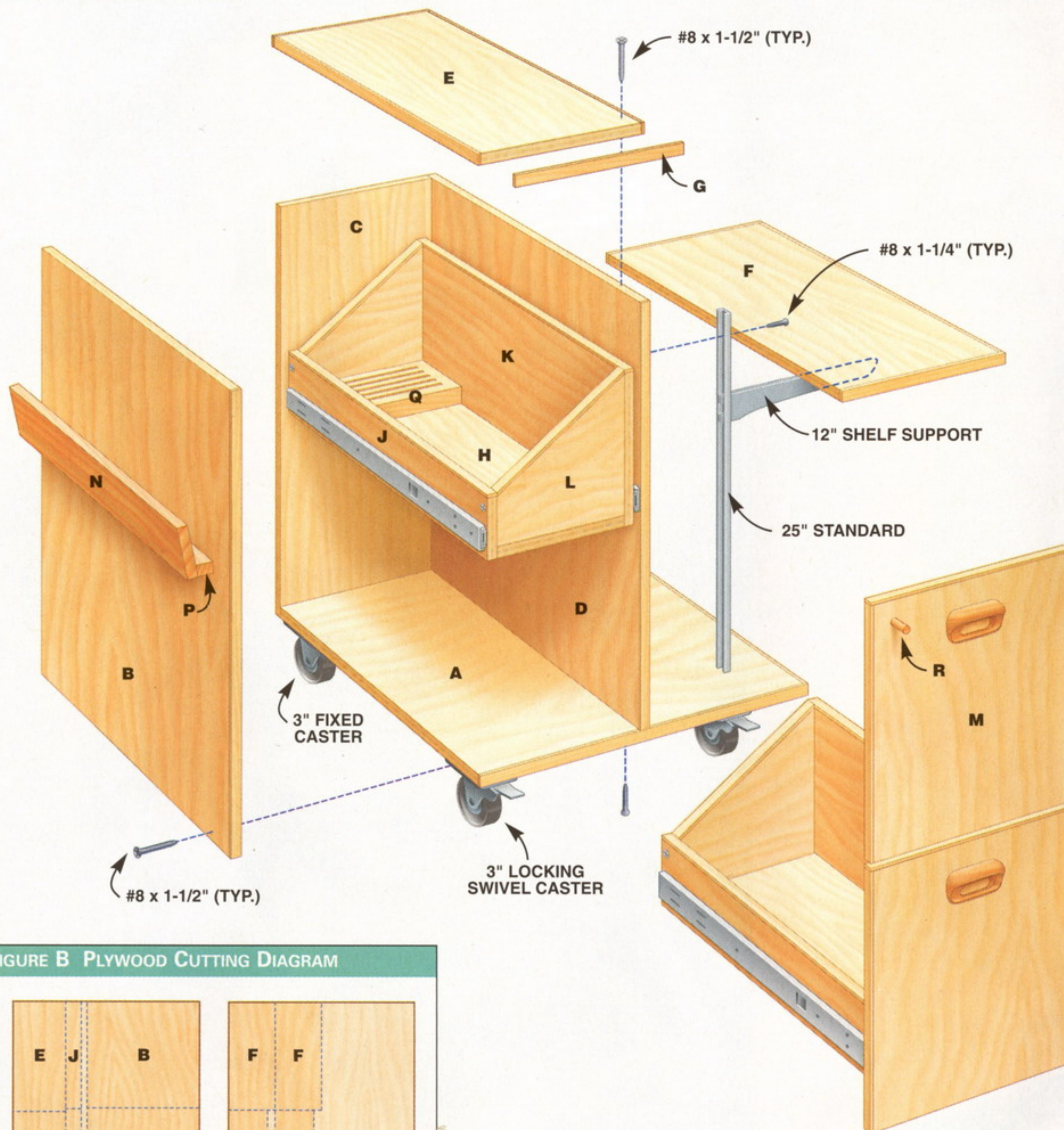
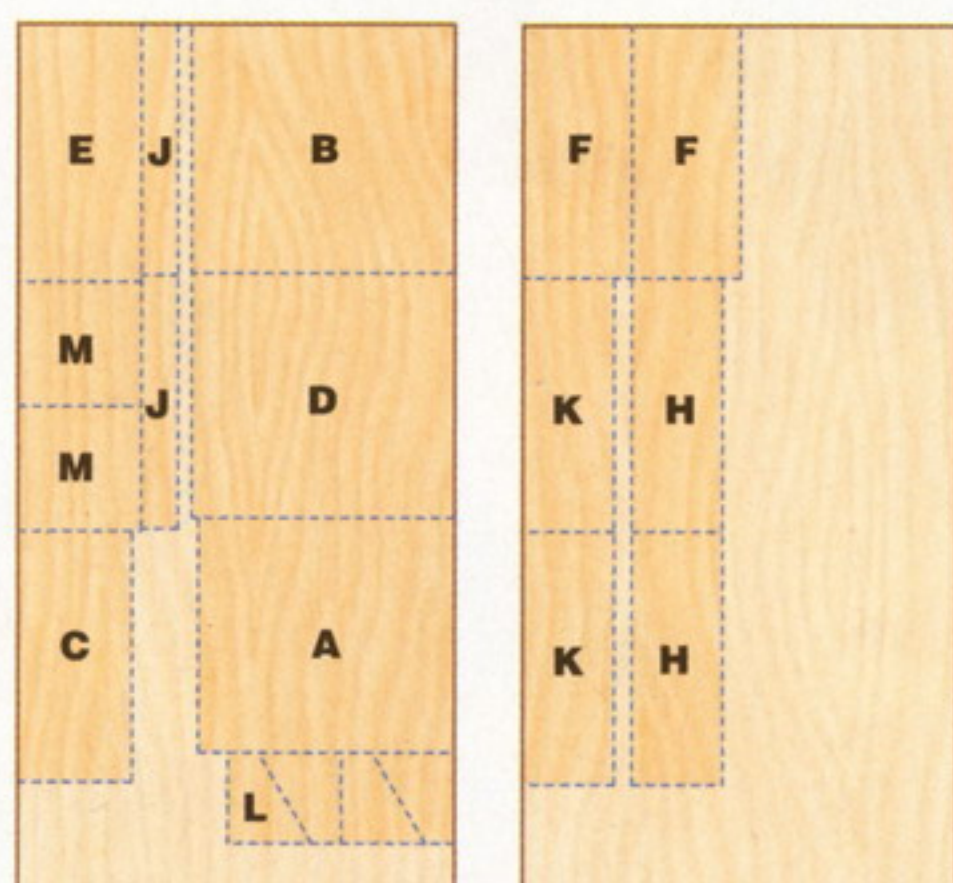


FIGURE B PLYWOOD CUTTING DIAGRAM



Build this tablesaw cabinet in an afternoon and never have to search for a missing accessory again.

FEATURES



DRAWERS

Deep, open-sided full-extension drawers provide easy access and big capacity.



BRACKETS

Dowels and a bracket keep everyday accessories right at hand.

SHELVES

Adjustable shelves store accessories that don't easily fit in the drawers. There's even a bin for storing off-cuts you simply can't bear to throw away.



ASSEMBLE THE CABINET BOX

Cut the parts from the two sheets of plywood (Fig. B, page 68). Add the 1/4-in. hardwood edging (G). Screw the cabinet sides (B, D) and back (C) to the bottom (A) (Photo 1; Fig. A, page 68). Attach the top with screws.

BUILD THE DRAWER BOXES

Set up the drawer pieces (H through L), clamp and fasten them with screws (Fig. A). Add hardwood edging.

ATTACH AND ADJUST THE DRAWER SLIDES

Full-extension drawer slides are a must to access the drawer's contents

(see Sources, page 70). The slides consist of two parts: a cabinet member and a drawer member.

Attach the cabinet members flush with the front edge of the cabinet (Photo 2). Use a 14-1/2-in. spacer for the upper slides and a 3/4-in. spacer to set the bottom cabinet members.

To set the drawer members, align the 3/4-in. spacer block flush with the bottom edge of the drawer side. Set the drawer member on the spacer flush with the front and screw it to the drawer.

COMPLETE THE DRAWERS

Nail hardwood edging to the sides and top of the drawer faces (M). Set the

drawers in the cabinet. Align the faces to the drawers and fasten with 1-in. brads or double-faced tape. Open the drawers, and screw the faces to the drawer boxes from inside.

Install the handles (see Sources). Add a peg (R) to the top drawer face for hanging a push stick.

ADD SHELVES AND CUSTOM STORAGE

Attach the shelf standards (see Sources) to the cabinet side. Snap shelf supports in place and screw on the shelves.

I used leftover plywood to make a scrap bin for the bottom shelf. Fasten a bracket (N, P, Fig. A) on the left side



1 Assemble the cabinet with butt joints and screws.

of the cabinet for your miter gauge. Mount it as low as possible to avoid interfering with the operation of the blade-tilt handwheel. Add other holders—a peg for the arbor wrench, for example—as needed.

I fashioned a blade holder (Q, Fig. A) from a 2-ft. length of 2x6 (Photo 3). Lower the blade completely and clamp the 2x6 to the rip fence. Set the fence at 13/16 in. Start the saw and slowly raise the blade until it barely breaks through the 2x6. Lower the blade completely, move the fence over 15/16 in. and repeat the process. Continue until you have five slots.

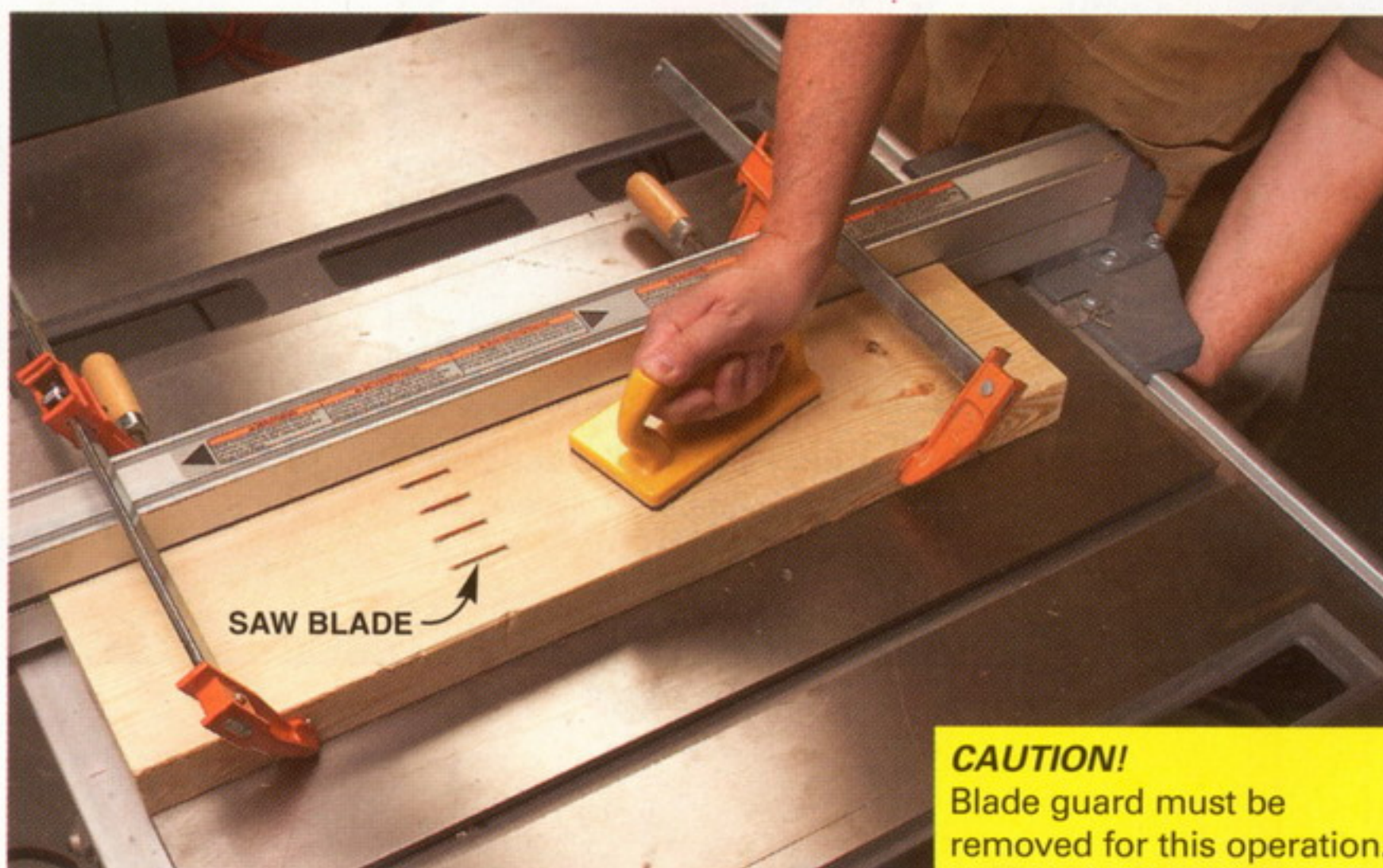
Remove the 2x6 and cut the holder to fit the width of the drawer. Set the holder in the drawer and secure it with screws from the bottom.

Finally, tip the cabinet on its back and attach the wheels. Use 3-in. locking swivel casters in the front and fixed casters in the back. Screw the casters in flush with the left edge and 6-in. in from the right edge.

Sources Woodworker's Hardware, (800) 383-0130, www.woodworkershardware.com 28-in. full-extension drawer slides, 100-lb. capacity, #KV8400, \$11 a set. • Home centers and hardware stores Wooden drawer handles, locking wheels and heavy-duty adjustable shelf standards and brackets.



2 Spacer boards make it easy to install the drawer slides in the cabinet. The 3/4-in. spacer is also used to position the drawer members up from the bottom edge of the drawers.



CAUTION!
Blade guard must be removed for this operation.

3 Make the blade holder on your tablesaw. Cut a series of blade-shaped slots in a clamped-on 2x6 by slowly raising the blade until it just breaks through the top.

CUTTING LIST

Overall Dimensions: 27"W x 30"D x 32-1/4"H

Part	Name	Qty.	Dimensions*
A	Bottom	1	3/4" x 28-1/4" x 26"
B	Left side	1	3/4" x 29" x 27-3/4"
C	Back	1	3/4" x 12-1/2" x 27-3/4"
D	Right side	1	3/4" x 29" x 27"
E	Top	1	3/4" x 13-1/2" x 28-3/4"
F	Shelf	2	3/4" x 12" x 28"
G	Hardwood edging		1/4" x 3/4" x 38 linear ft.
H	Drawer bottom	2	3/4" x 10" x 28"
J	Drawer side left	2	3/4" x 4" x 28"
K	Drawer side right	2	3/4" x 10" x 28"
L	Drawer end	4	3/4" x 9-1/4" x 10"
M	Drawer face	2	3/4" x 13-1/2" x 14"
N	Bracket	1	3/4" x 3-1/2" x 24"
P	Bracket bottom	1	3/4" x 1-1/4" x 24"
Q	Blade holder	1	1-1/2" x 5-1/2" x 10"
R	Peg	1	2-1/2" x 3/8"-dia. dowel

*Actual thickness of 3/4-in. plywood may be less, so adjust measurements as needed.

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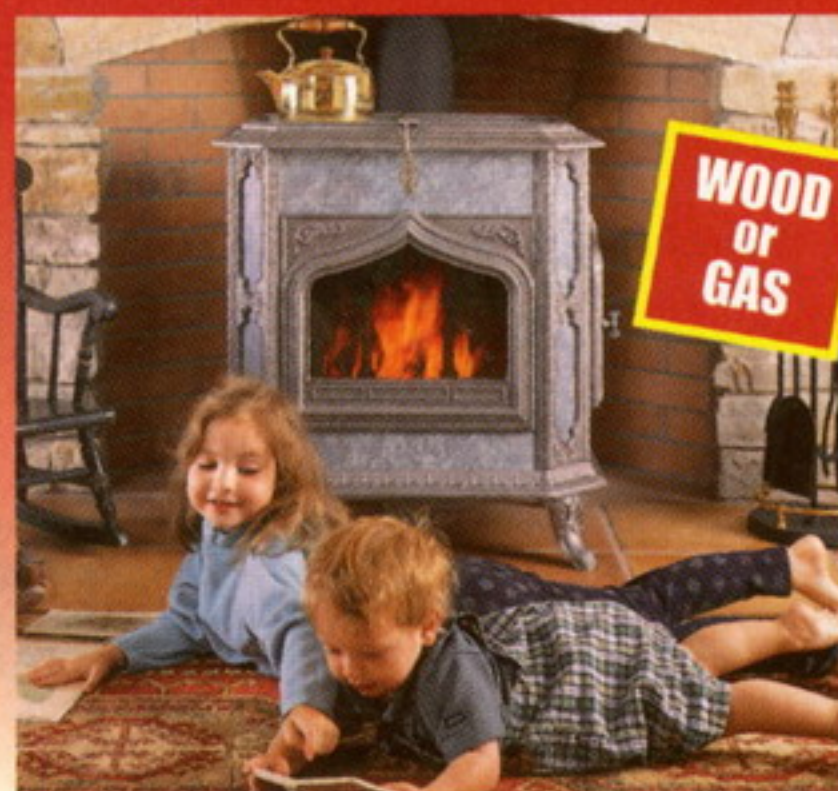
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The editors of *American Woodworker*



Tune Up an Old Chisel

Turn a beater
into a razor-sharp tool.

One of my favorite tools is a legendary Stanley No. 50 chisel. Made in the 1920s, it had seen hard times. Restoring it was a labor of love, and well worth the effort. Its steel holds a long-lasting, super-sharp edge. No doubt you've got some beat-up chisels in your toolbox that could be revived, too.

I'll take you through the complete process of restoring a chisel that's in tough shape. These steps are equally useful for a new tool, fresh from the box. Please notice that I put equal emphasis on the chisel's bevel and back. Both must be in perfect condition, for every sharp edge has two sides. Let's begin with the back.

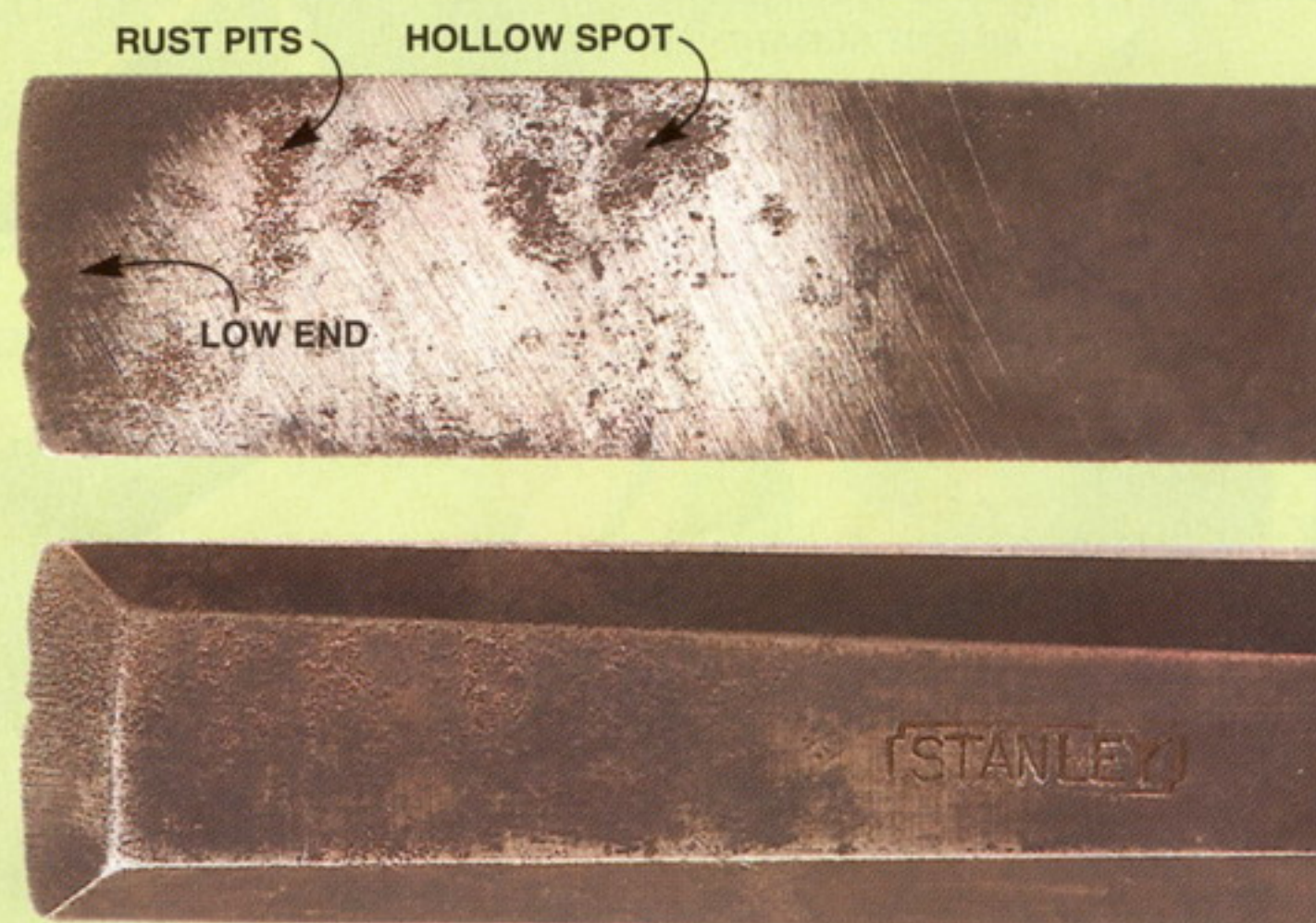
EVALUATE THE BACK

Inspect the back by sanding with fine paper (Photo 1). Put 220-grit pressure-sensitive-adhesive (PSA) sandpaper on a flat surface, such as a granite surface plate, 1/4-in.-thick piece of glass, cast-iron tablesaw wing or jointer bed (see Sources, page 94). Sand the back a few times using diagonal strokes.

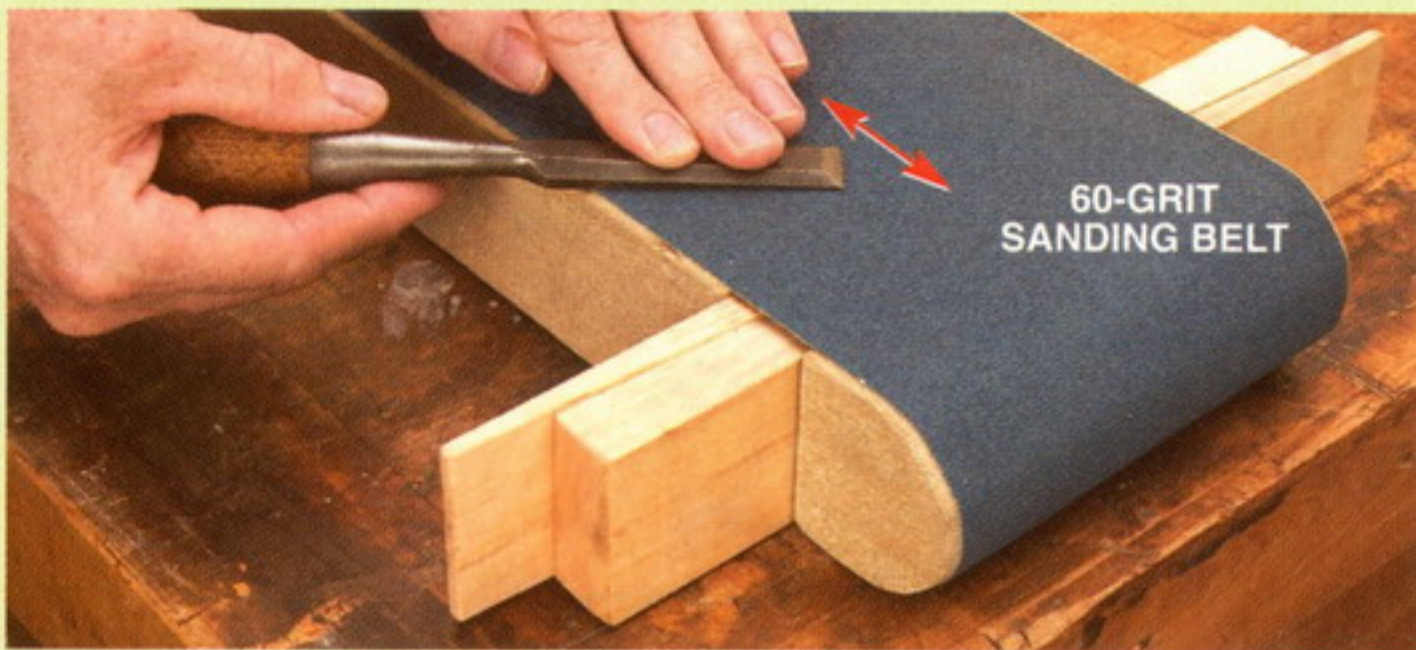
Sanding reveals low spots. With an old tool, you'll probably find rust pits, large hollows or a dip at the leading end.

FLATTEN THE BACK

My chisel's back looked so bad that I began flattening with 60-grit paper (Photo 2). If the inspection sanding indicates few low spots, begin with a finer grit. The point is to avoid making unnecessarily deep scratches. Machinists call this process lapping. For the coarse



1 An old chisel usually needs lots of help. Lightly sanding the back reveals hollow spots, rust pits and a rounded-over or low leading end. This chisel's bevel is also chipped and uneven.

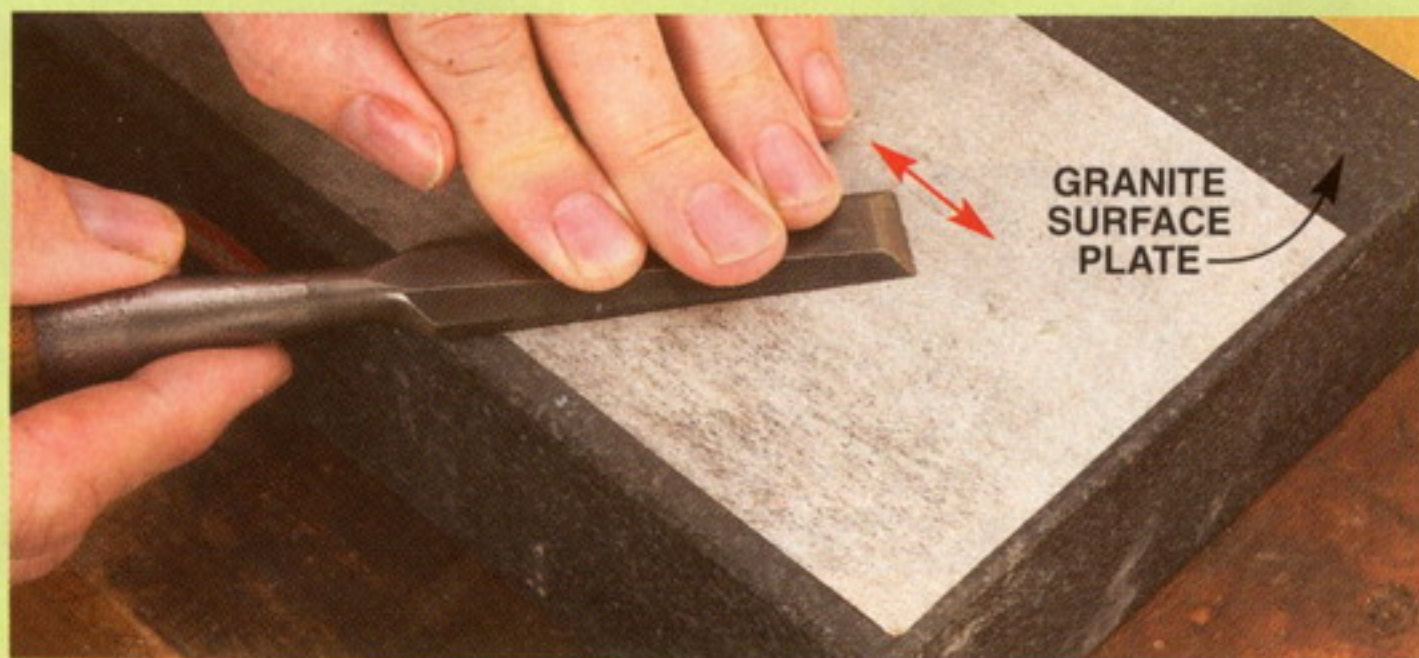
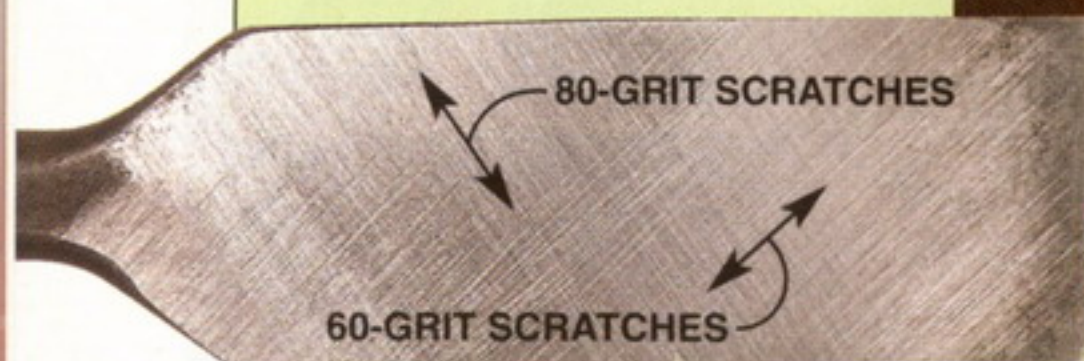
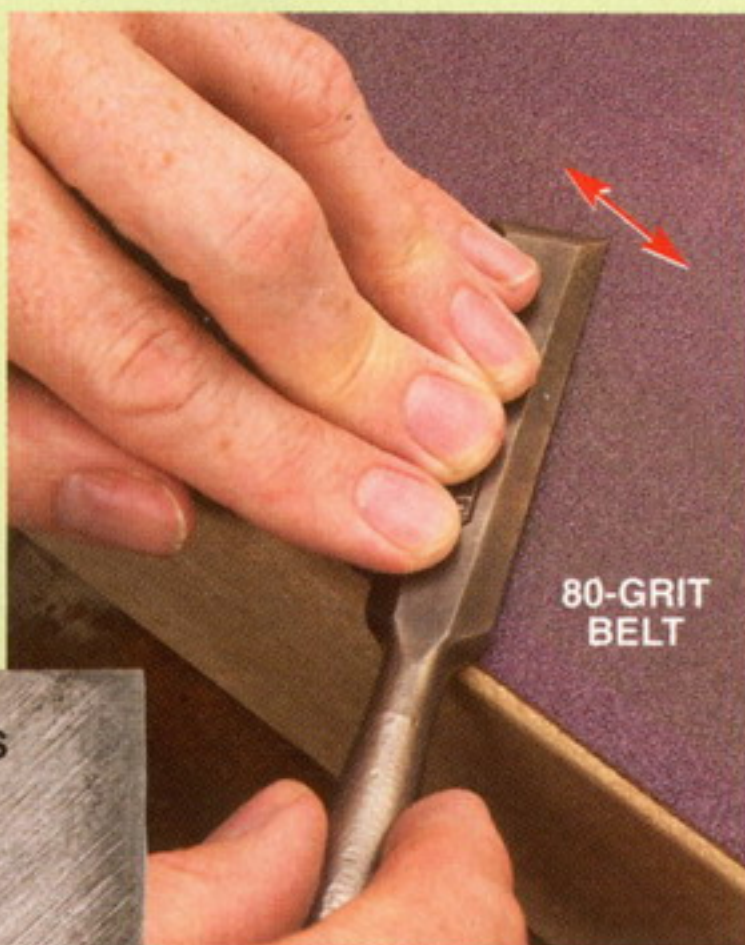


2 Flatten the back on sandpaper using heavy pressure and diagonal strokes. I prefer to work on a 6-in. x 48-in. sanding belt. It's easy to reuse and lasts a long time. The belt is stretched taut on a shop-made jig (see "The Lapping Jig," page 84).



3 Sand until the back is level. You'll know you're done when all the rust pits and low spots are gone and the back is completely covered with scratches. If the leading end is low and unscratched, don't worry about it. You'll grind this off later.

4 Start smoothing the back with finer grits. Hold the chisel in an opposing diagonal direction on each grit. Keep sanding until all the scratches from the previous grit are gone. It's easy to distinguish new scratches from old ones because they run in opposite directions. Go up to a 120-grit belt.



5 Switch to 150-grit pressure-sensitive-adhesive (PSA) sandpaper and a flatter surface, such as a granite surface plate. Repeat the process with 220-grit paper. The back isn't fully polished yet, but it's time to take a break and go to the grinder.

work, I use premium-grade sanding belts stretched tightly on a shop-made jig (see Sources, page 86, and "The Lapping Jig," page 84). They can be reused many times, unlike PSA paper. Lapping a back in poor condition may require many strokes, which is hard on your hands, so I often wear rubber-coated gardener's gloves and take frequent breaks.

Continue sanding until you reach the bottom of the low spots. How far up the back must you go? Two to three inches are minimum, but I usually lap the whole back. (A totally flat back enables me to use guide blocks when I pare mortises, tenons and dovetails.) If 1/4 in. or less of the back's leading end is lower than the worst rust pits and hollows (and that's not unusual), don't worry about it (Photo 3). Let it go. It's too much work to lap the entire back down to this level. Instead, you'll grind off the leading end later.

SMOOTH THE BACK

Smoothing the back requires going through a series of finer grits (Photo 4). With each one, you must remove all traces of the scratches made by the previous grit. How can you tell when that happens? I change direction with each grit. This makes coarser scratches easy to distinguish from finer ones. On the 60-grit paper, for example, I held the chisel pointed right. On the 80-grit paper, I pointed it left. It doesn't pay to skip grits. If you start with 60-grit, continue with 80-, 100- and 120-grit papers.

Precision is critical as you continue to refine the back. After a 120-grit belt, I switch to 150- and 220-grit PSA paper (Photo 5). (Fine sanding belts won't work because their backing has too much give. This rounds over a chisel's sides.) Mount the PSA paper on an absolutely flat surface. I prefer a granite surface plate because, unlike glass, granite is virtually unbreakable. The granite also can be stored with sandpaper stuck to it, which you can't do when using your tablesaw or jointer bed as a flat reference surface. An inexpensive granite surface plate costs \$18 (see Sources, page 86).

GRIND A NEW BEVEL

Grind a blunt edge if the bevel requires major reshaping (Photo 6). This is the best strategy when the back's leading end is low or if the bevel is heavily nicked or out of square. The blunt edge should be square to the chisel's sides. Draw a pencil line across the back to guide your grinding. Continue to grind until you've removed all the low spots.

Adjust the tool rest and grind a 25-degree bevel (Photo 7). Go right up to the leading end. The bevel doesn't have to be perfectly straight, but a straight end is easier to hone than a crooked one.

POLISH THE BACK

Continue lapping the back by polishing it on your sharpening stones (Photo 8). Your goal is to achieve a mirror surface, but you can't get there in one step. I use three waterstones: medium (800 or 1,000 grit), fine (1,200 or 2,000 grit) and super-fine (4,000, 6,000 or 8,000 grit).

Begin with a medium stone, but first make sure it's flat (see "Waterstones," AW #116, Sept. 2005, page 30, or www.americanwoodworker.com/waterstones). A medium stone won't create visible scratches. Instead, you'll get a very dull shine. This should extend all the way across and 1-1/2 in. to 2 in. up the chisel's back.

HONE THE BEVEL

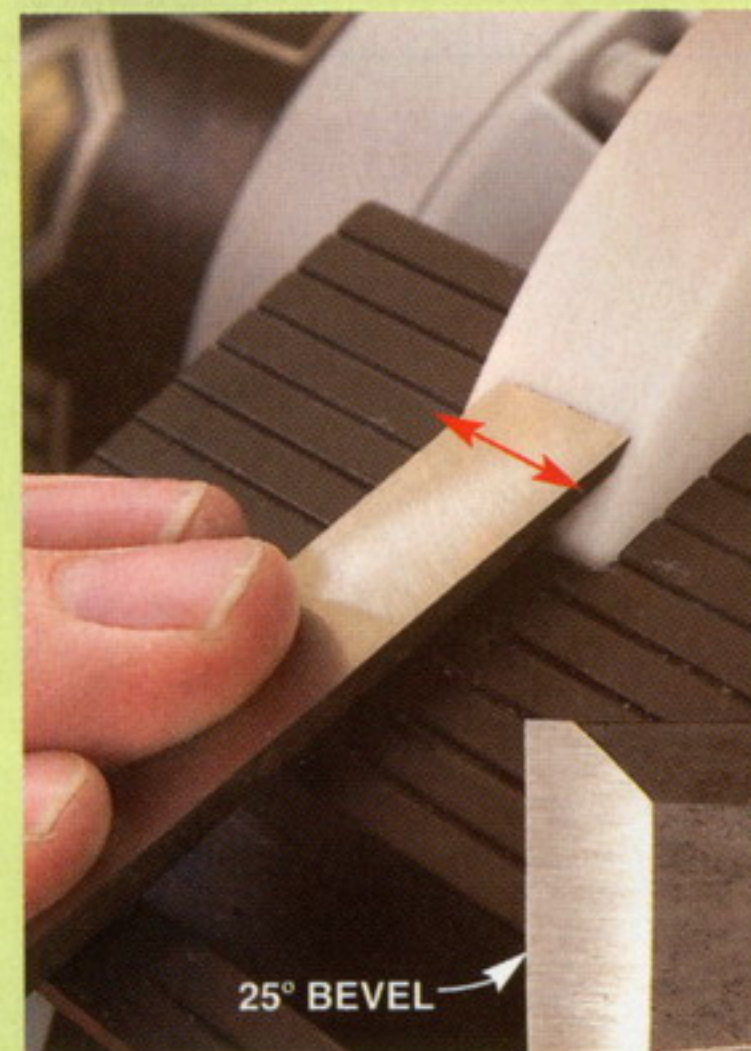
Begin honing the bevel on the medium stone (Photo 9). I prefer the Veritas Mk. II honing guide because it's easy to set up and handles a wide variety of chisels (see Sources, page 86). Place the chisel in the guide at the correct projection to hone a 30-degree bevel. This is 5 degrees steeper than the ground bevel, so you'll only be sharpening the leading edge. Creating two bevels saves time and effort.

Hone until you feel a wire edge along the chisel's back (Photo 10). This small metallic ridge must extend all the way across, from corner to corner. A wire edge is the best indication that the honed bevel and the back meet, creating a sharp edge.

Remove the wire edge on a fine stone (Photo 11). Polish the back until you can no longer feel a ridge. (After your tool



6 Grind off a leading end that's low, nicked or uneven. Create a blunt edge by positioning the tool rest approximately 90 degrees to the wheel. A blunt edge is much less prone to overheating than a thin edge. That's important when you're reshaping an entire bevel.

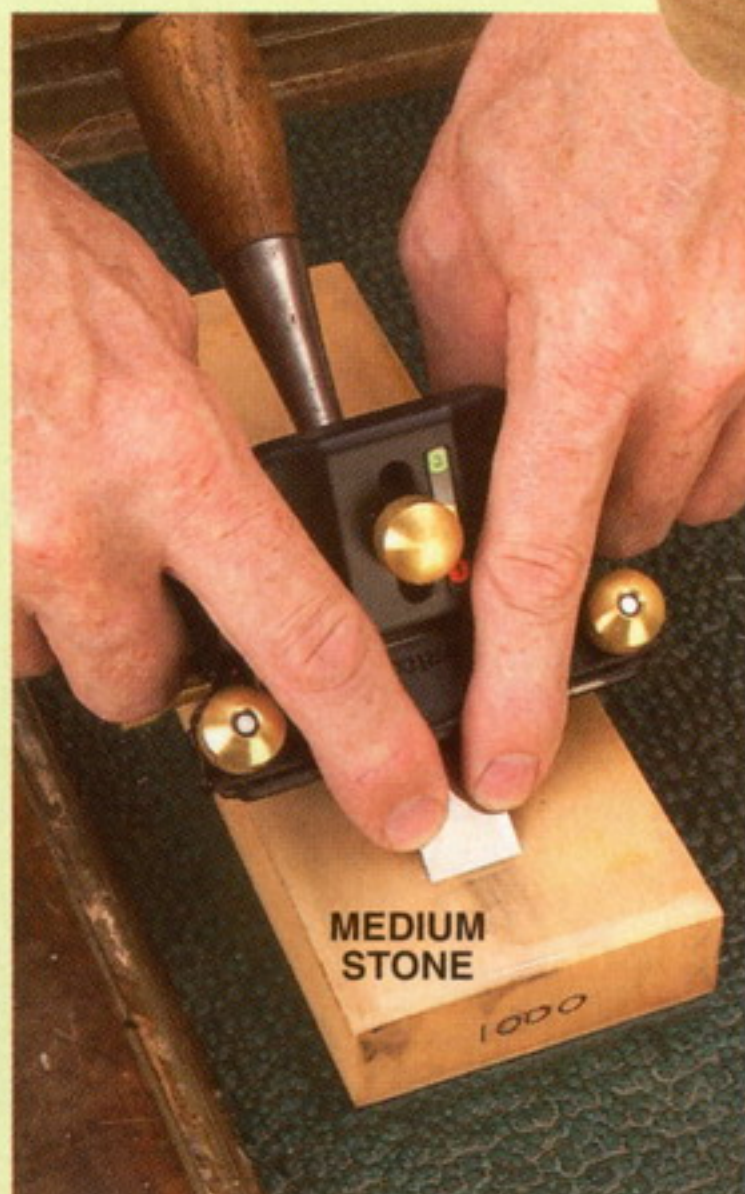
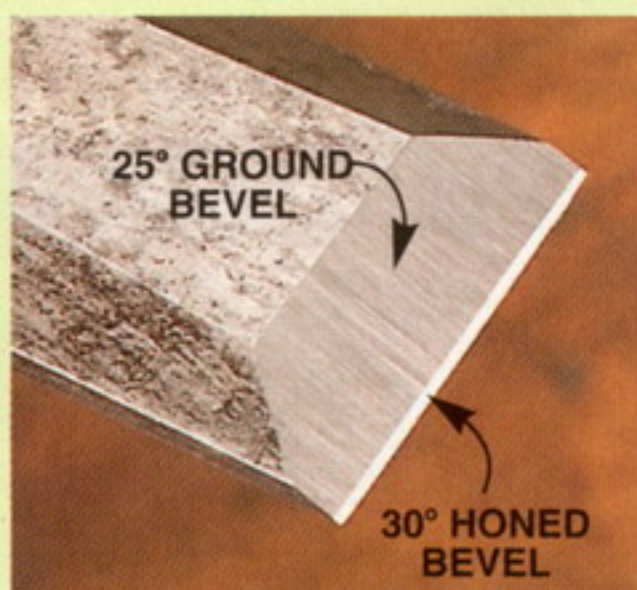


7 Grind a new 25-degree bevel. Grind all the way up to the leading end. Make sure the end is square within a few degrees. To prevent overheating, frequently dip the chisel in water as you approach the leading end.



8 Polish the back on a medium stone until all the 220-grit scratches are gone. A medium stone creates a dull grey finish. You only have to work the first two inches or so, not the entire back.

9 Hone the edge at 30 degrees to create a new, narrow bevel. I use a honing guide to ensure that each stroke follows precisely at the same angle.

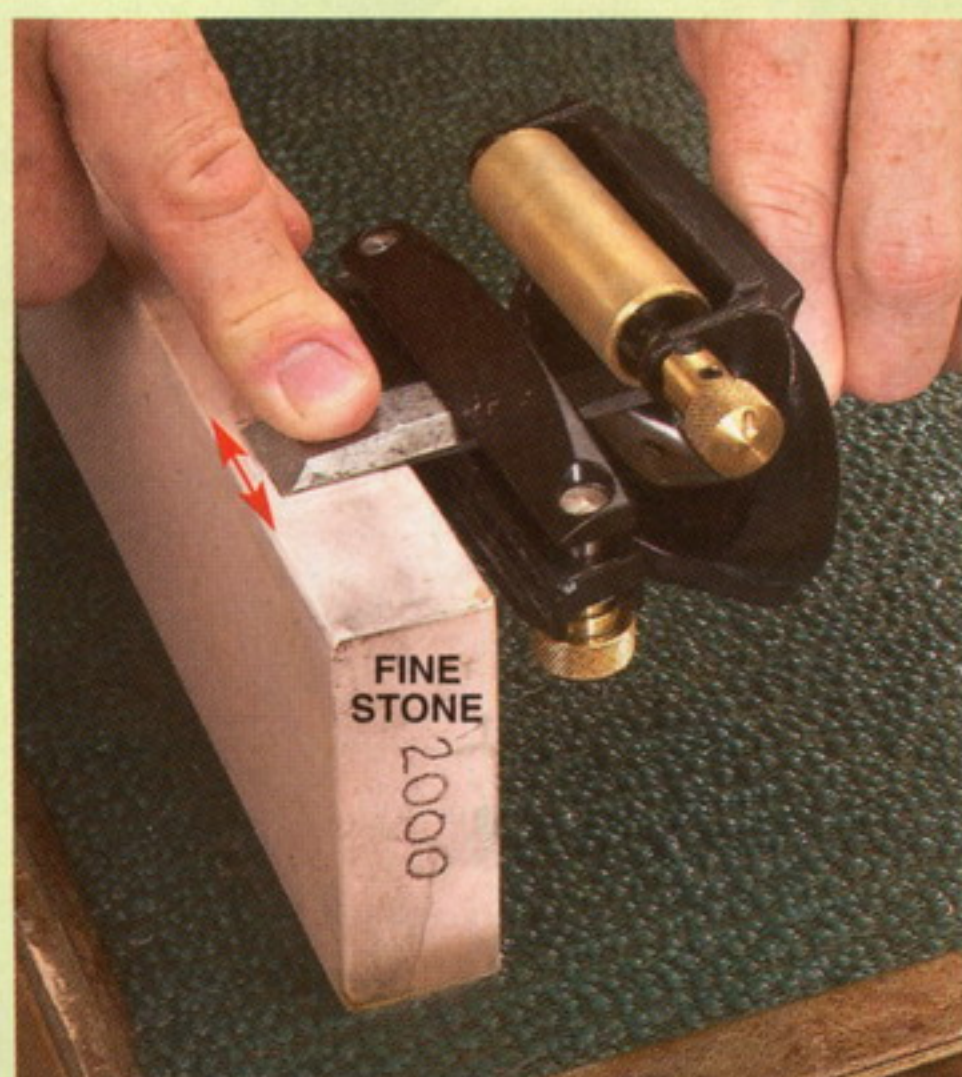


THE LAPPING JIG

Opposed wedges tighten a sanding belt placed over this jig. Strike the wedges with a hammer to stretch the paper taut. This jig works for a belt of any size, though I prefer 6-in. x 48-in. belts for their huge surface area. Make the jig from three layers of 3/4-in. MDF glued together. To round the ends, make two 45-degree crosscuts first, and then sand in between them.



10 Feel for a wire edge. This small, raised ridge of metal on the back's leading end indicates it's time to stop honing. Be sure to check the corners. The wire edge must go all the way across.



11 Polish the back on a fine stone. Push down on the back with one finger to ensure the back stays flat to the stone. When the back is uniformly polished and the wire edge is gone, turn the chisel over. Hone on the same stone until you feel a new wire edge.

has been restored, you should only remove its wire edge on your super-fine stone.) Keep polishing the back until it's evenly shiny.

Hone the bevel on a super-fine stone (Photo 12). With the Mk. II honing guide, you can increase the bevel angle by 2 degrees to save time honing on the super-fine stone. This creates a narrow microbevel. A microbevel isn't necessary on a freshly ground chisel, but after a number of sharpenings, the 30-degree bevel will grow quite wide. At this point, honing a microbevel on the super-fine stone makes sharpening more efficient.

Most times, you won't be able to feel a wire edge develop while you're using a super-fine stone. The best strategy is to hone six strokes or so, flip the chisel and polish the back six strokes. Repeat this process three or four times.

Inspect the edge before you remove your chisel from the honing guide. Catch the reflection from a light or window. You should see a bright line extending to the leading end from tip to tip. If you see a dull line at the leading end, you haven't honed enough on the super-fine stone. If everything looks OK, remove the chisel from the guide and test it on the barrel of a pen (Photo 13). You should be able to hold the chisel at a very low angle and make a curl. Now that's sharp!



12 Hone the edge and polish the back on a super-fine stone. A wire edge created by this stone is difficult to detect, so go back and forth between the bevel and the back a few times. Both surfaces will have a mirror polish—the key to an ultrasharp tool.

13 Test your edge on a plastic pen barrel. If you can push the chisel at a very low angle and create a long curl, the chisel is good to go. The ultimate test for a sharp chisel is paring end grain. After I lapped and honed my tool on an 8,000-grit stone, it passed with flying colors.



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TREASURE FROM TRASH

One day while disposing trash at the landfill, I discovered a pristine miter saw. It looked perfect—well, almost. The blade was covered with nasty burn marks. I love fixing old tools, so I took the saw home, expecting to recondition it and replace the blade.

Imagine my surprise when I discovered the blade had been installed backwards. No wonder it had scorched so badly. After I turned the blade around, the saw cut beautifully. Job done!

I had a bit of fun trying to imagine how this saw ended up in the trash. At some point, the last owner must have put the blade in the wrong way. I pictured a lot of smoke and burnt wood, angry words blaming the saw for its poor performance and a frustrating trip to the dump. That trash is now my treasure: I've been using somebody's cast-off saw ever since that lucky day.

Mike Bube



WRONG-WAY DOVETAILS

My first hand-cut dovetail project was a wall unit for my prized tools. I designed a wonderful case with exquisite drawers and shelves, reserving the bottom shelf to proudly display my huge No. 7 and No. 8 jointer planes. The case's corners were through dovetails. I practiced cutting them for what seemed like weeks before I tackled the real thing. I had no idea disaster loomed.

I assembled the case without glue, figuring my tight joints were strong enough on their own. I hung the case on the wall and loaded it with tools. When I placed the second heavy plane on the bottom shelf, I watched in horror as both shelf and planes fell to the floor. I had oriented the dovetails the wrong way.

I learned a valuable lesson that day. Dovetails make a very strong joint, but without glue, they only resist being pulled apart in one direction. If I had cut the joints the opposite way, with the tails in the case sides and the pins in the shelf, those joints would have lasted a hundred years. Next time, I'll use glue, too!

Brandon Williams



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