

TESTED: Drum Sanders for the Small Shop

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#93 April 2002

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A READERS DIGEST PUBLICATION

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Make one, and with our jigs, make a dozen more!

Heavy-Duty Folding Shop Table 74

It folds up small, but this beefed-up shop table is rugged and ready.

Classic Jewelry Box 80

This rich-looking and practical box is a perfect gift.



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AMERICAN WOODWORKER®

American Woodworker APRIL 2002

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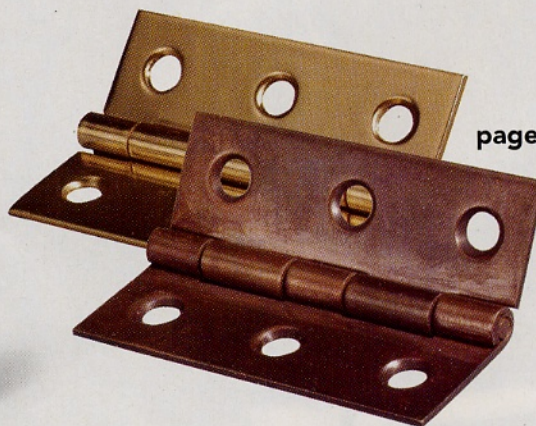
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READER'S SERVICE

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Editor's Letter

A "Do-Over" Tabletop

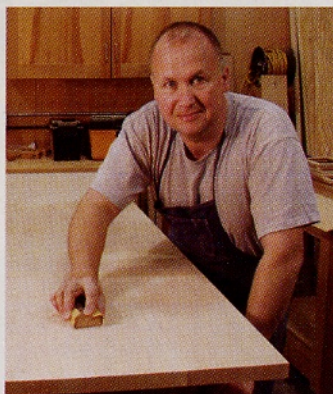
I've been working in the shop for the last few days, making a new top for our dining room table.

That table is one of the first large pieces of furniture I made, over 20 years ago. It's a Shaker refectory-type table in cherry, and it was made to fit our old dining room, which was very narrow. The new top is going to be longer, wider, and much easier to get the whole family around.

It's also a chance for me to experience one of the rarest pleasures for a woodworker: the "do-over." This time around I get to correct all the little things that have bugged me about that table for years. The boards on the top, for instance, were never well matched for color. No matter how dark the cherry got with age, one board was always much darker than the others. If you've worked with cherry much, this is a familiar problem to you. I had a heck of a time jointing the edges of the long boards in that first tabletop, too, with just a little 6-in. jointer and my (brand new) jointer plane. And I put an oil finish on it, which didn't hold up to daily use very well, resulting in some glue lines opening up.

So the new top will correct all those shortcomings. But as I look at the old one, I'm sad to see it go. There's a black stain in the shape of a cookie cutter, the result of an unfortunate combination of water, steel and cherry during one of our annual holiday cookie-making orgies. There's the large and mysterious dent near where my oldest son always sat. There are the dozens of stains (pear sauce? strained beets?) at each end, where the high chair was always placed. There's the burn mark acquired during a rowdy Valentine's Day party. This table is like a scrapbook of our family's life, and I kinda hate to lose it. Is that the price I have to pay for a do-over? Hmmm... Maybe I could cut that old table down and turn it into a coffee table...

Ken
Ken Collier



STAFF

AMERICAN WOODWORKER

Subscription Questions? See page 5

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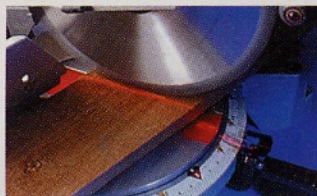
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The American Woodworker Shows have been cancelled until further notice.

In light of the economic uncertainty following the tragedy on September 11, we have decided to cancel the American Woodworker Shows at this time. For details, please go to our Web site, www.americanwoodworker.com. We apologize for any inconvenience this may have caused.

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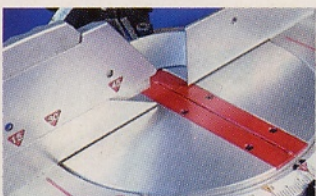
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Question & Answer

How Fast Should a Forstner Bit Spin?

Q. I just bought a set of Forstner bits for my drill press. The first time I used one I made more smoke than sawdust! How do I figure out the right spindle speed for these bits?

Raymond Wickerman

A. To find the fastest *maximum* speed for any size Forstner bit, do a little experimenting. Start at a fairly slow speed (800 rpm for 1- to 1-3/8-in. bits, 600 rpm for larger ones). If you make chips, fine. Bump up the speed one setting and try again. If you make more sawdust than chips, you're going too fast.

The right speed will vary with the density and moisture content of the wood. You should be making long strings of chips rather than smoke or sawdust. Both smoke and sawdust are warning signs that the bit is turning too fast or you're pushing down too hard.

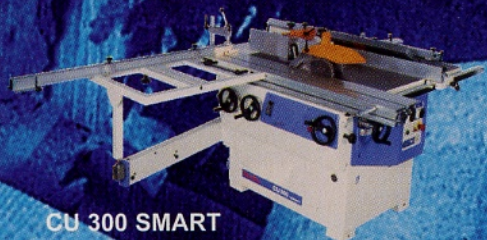
So what's wrong with a little smoke? If the bit turns too fast, it'll overheat and turn blue around the rim, indicating that it's lost its temper (!). That's not good. The bit will dull much faster and won't make a correctly sized hole.



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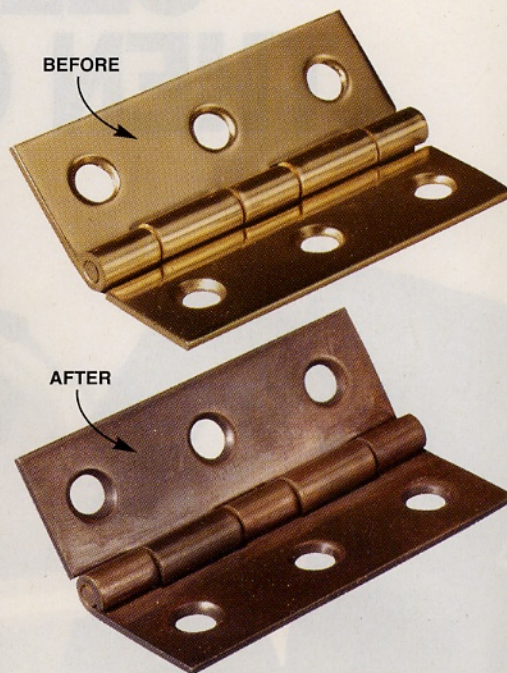
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Question & Answer



Instant Age for New Hardware

Q. I'm missing some hardware on an old piece of furniture. I found some replacements, but they're way too shiny and new-looking. What do I do?

Pat Kinney

A. If your new hardware is solid brass, solid steel, or plated with zinc, you're in luck. There's an easily applied chemical called Brass Ager (\$2.75 for 8 oz., see Sources, page 108) that will darken your metal to look like old, patinated hardware. Traditional chemicals such as ammonia and gun-bluing don't work on all three of these metals.

Brass Ager works in minutes and can be used over and over again. Submerge your hardware in Brass Ager and remove it when it reaches the color you want. Polish the hardware with a white cotton cloth to add luster.

Brass Ager won't work on brass-plated hardware. How do you tell what's what? A magnet will stick to brass-plated hardware, but not to solid brass. If the hardware is coated with lacquer, remove the lacquer with paint remover before using Brass Ager. **AW**

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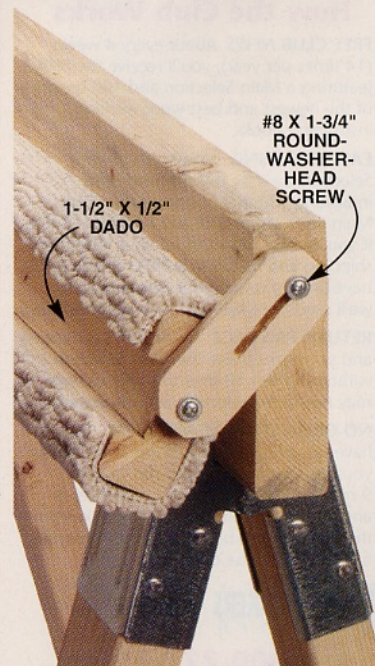
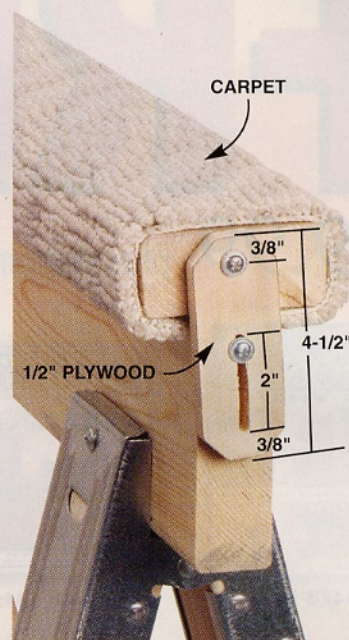
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Workshop Tips

Flip-Top Sawhorses

I got tired of rummaging around for a blanket or anything soft to lay my finished projects on, so I rigged up these simple carpet caps that fit on top of my sawhorses. They just flip out of the way when I'm back to rough work.

James Blandford



ART DIRECTION: VERN JOHNSON • PHOTOGRAPHY: LEAD PHOTO BY RAMON MORENO, ALL OTHERS STAFF



STICK-ON TAPE MEASURE

DOWELING JIG

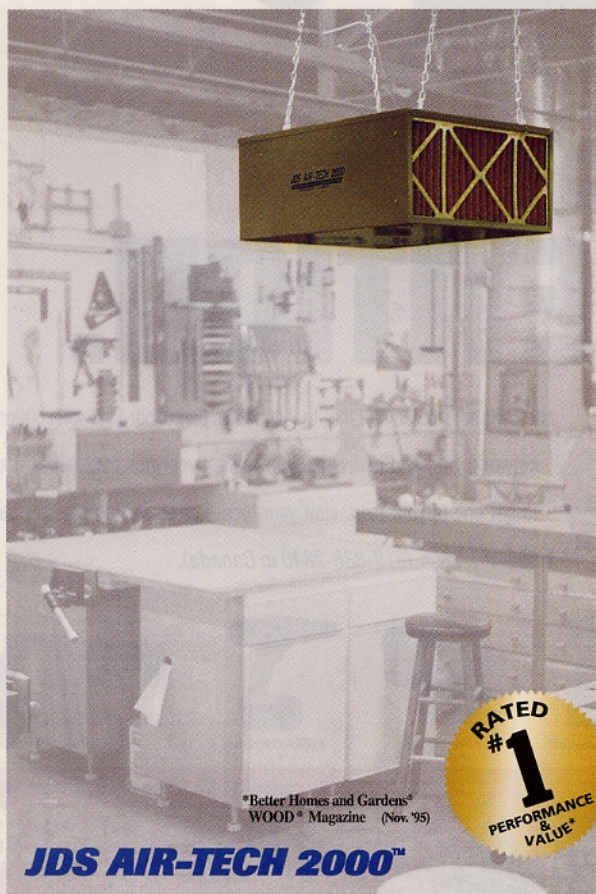
2X2 FENCE

Doweling Jig Saw Stop

My doweling jig ended up in the junk drawer after I bought my biscuit joiner. I brought it out of retirement though, when I set up my chop saw bench. That old doweling jig has become a very useful saw stop. I simply clamp it to my 2x2 fence. I added a tape measure to the top of my fence, which makes setting the stop quick and accurate. It's simple to remove the jig if I need to use it for doweling.

Josh Brower

Sources See page 108



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Workshop Tips



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Here's a great little clamp for those light-duty hobby or craft jobs. Start with two ordinary clothespins, then modify and combine them as shown above. You now have a clamp with triple the capacity of a single clothespin.

Alan Dooley

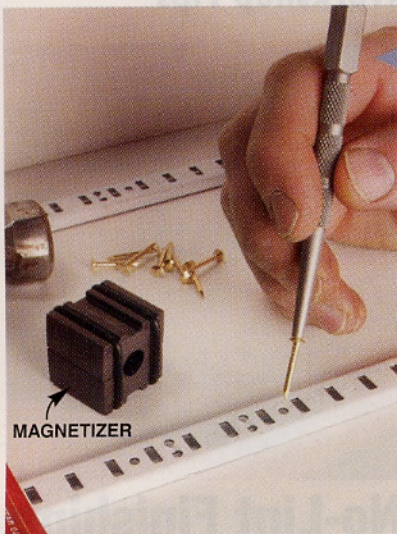


Magnetic Nail Starter

Over the years I've built dozens of cabinets. Installing the little nails for the shelf standards was the worst part of this job until I discovered this little device called a magnetizer. It's commonly used to magnetize screwdrivers for picking up screws. I used it to magnetize my nail set and now I can pick up and start the little nails with ease.

Floyd Steck

Sources See page 108



Beaded Edge Detail

I recently spruced up an old vanity by adding a beaded edge detail to the drawers and doors. I started by cutting down the door and drawer fronts by 1/2 in. My drawer and doors were 3/4-in. thick so I made the bead molding 7/8-in. wide by 1/4-in. thick and rounded the edge with a 1/4-in. edge-beading bit. I mitered the bead molding to fit and nailed and glued it on. I refinished the vanity so the new beading blends right in and looks like it was always there.



Spike Carlsen

Sources See page 108



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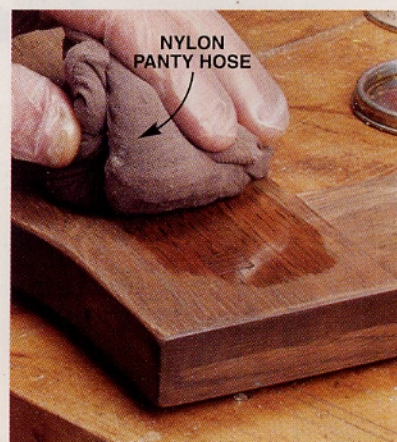
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Workshop Tips



No-Lint Finishing

When you apply a wipe-on finish with a regular cotton cloth it can leave little bits of fuzz in the finish. To prevent this, take an old pair of nylon panty hose and roll them up into a ball. The nylon holds lots of finish and applies it without leaving any lint behind. It really works great!

John M. Harrington

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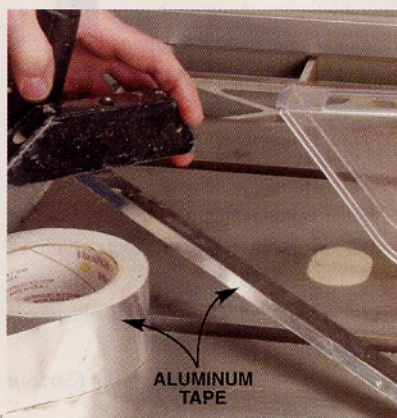
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Tape-On Miter Gauge Shim

While doing some precision tablesaw work, I discovered my miter gauge was a bit sloppy in the slot. I was in the middle of a project, and I needed a quick fix. After adding a layer of aluminum tape to each side of the bar I was back in action.

John Bullard

Sources See page 108

What do you look for in a biscuit joiner?

"...when I asked a group of professional cabinetmakers what they looked for in a biscuit joiner, their answer was, **'the name Lamello on the side.'**"

CWB - Custom Woodworking Business
Biscuit Joiners Comparison Test, December 2000

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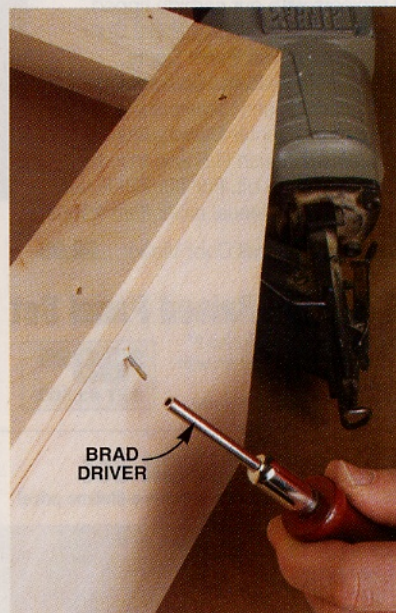
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Workshop Tips

Brad Driver in Reverse



My pneumatic nailer makes quick work of assembling cabinets, but if a nail blows out the side, it can be a real mess. Those power-driven nails often bend or break if you try to pound them back with a hammer or pull them through with a pliers.

Faced with this problem, I discovered a new use for my old, hand-pushed brad setter. It works great to push the errant nail back so I can get ahold of the nail's head with a pliers. The hollow barrel of the setter goes over the end of the nail and keeps it from bending. There's a metal plunger inside the barrel that pushes the nail back up. I sometimes have to tap on the setter with a hammer to get the nail moving. **AW**

Mary L. Nelson

Sources See page 108

If you have an original Workshop Tip, send it to us with a sketch or photo. We pay \$100 for each one we print. Send to:
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The Well-Equipped Shop

By George Vondriska
and Tim Johnson

Super-Smooth Benchtop Planer

Delta's two-speed portable planer (model 22-580) will set you back \$450. That's \$50 to \$150 more than most other portable planers. Most woodworkers get darn good results with their single-speed benchtop planers, so we wanted to know, is having a second speed worth the extra dough?

Before we answer that question, let's clarify what "two-speed" means. The 22-580's cutterhead speed doesn't change. Instead, you can slow down the feed rate. When a board passes under the cutterhead more slowly, it gets more knife cuts per inch (cpi) and the result is a smoother surface.

Standard single-speed, portable planers operate at around 60 cpi. With the 22-580, you can choose 60 cpi (regular speed)

or 90 cpi (slow speed) with the flip of a switch.

Most boards planed at regular speed will be acceptable. But with the 22-580, a final pass at slow speed results in a smoother finish and less sanding.

You'll see far less tear-out when you plane "problem" boards at slow speed. Any board with curly figure or reversing grain qualifies (see photos below). Every once in a while, a board tears-out badly, for no apparent reason. With the 22-580, you can probably save it by making the last couple passes at slow speed.

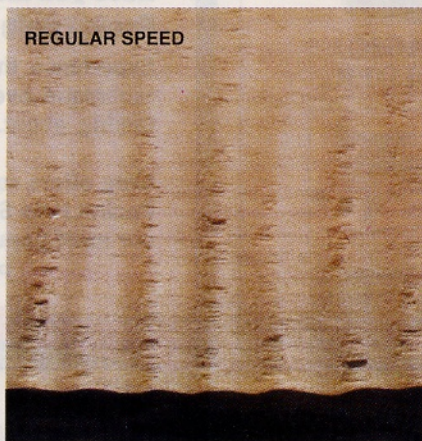
The Delta 22-580 handles stock up to 13-in. wide and from 1/8-in. to 6-1/2-in. thick. It's equipped with double-edged disposable knives that are a snap to change (a replacement set costs

\$40), and a cutterhead lock to control snipe. The dust shroud, a \$25 accessory, exhausts left or right.

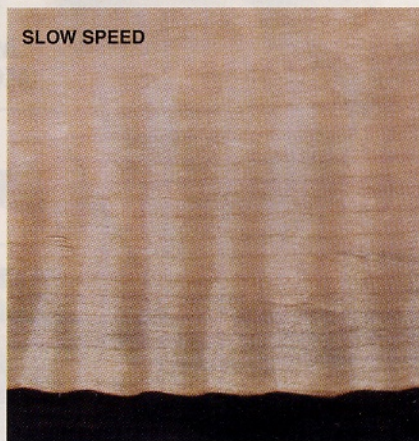
The 22-580's height-adjustment mechanisms are first rate. A slick "blade-zero" indicator makes it easy to set the cutterhead for the first pass. The stock thickness indicator is easy to read (surprise!), and an indexing ring on the handle lets you make precise adjustments.

Would we spend the extra bucks? Yes. The 22-580 would have fared very well in our portable planer tool test (AW #79, April 2000, page 82). Its two-speed capability really puts it in a class of its own. Saving a few pieces of highly figured (i.e. expensive) wood with the slower speed will quickly offset the price difference.

Sources See page 108



REGULAR SPEED



SLOW SPEED

Curly maple planed at regular speed looks like a potholed road. Removing the same amount (1/32 in.) at slow speed dramatically improves the finish quality.



RAMON MORENO

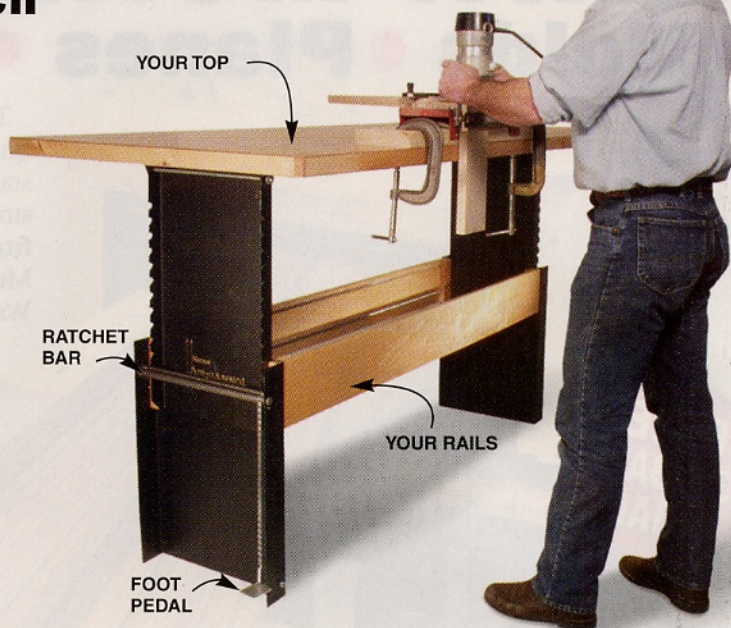
The Well-Equipped Shop

Adjustable-Height Bench

Want to save your back? If it seems your workbench is never the right height for the task at hand, the Noden Adjust-A-Bench may be just the ticket. For \$380, you'll end up with a rock-solid bench that adjusts from 27- to over 43-in. tall, quickly and easily.

Cutting dovetails? Raise the bench. Assembling a big project? Lower the bench. Mount your portable planer or benchtop lathe at a comfortable working height. The list of applications goes on and on.

The name Adjust-A-Bench is a little misleading, because you aren't actually buying a bench. Instead, you get a pair of ratcheting frames that form the ends of the base. You have to supply hardwood rails (about \$20) to connect the two ends, plus your own top. The top could be anything from a solid-core door (\$75) to a traditional, solid-wood benchtop with face and tail vises (\$400).



It's easy to raise the top. Just lift it, one end at a time. The ratcheted adjustment system has twelve stops. Stepping on the foot pedal while lifting up on the top releases the ratchet and lowers the top. Accidentally stepping on the pedal while you're working won't make the top come crashing down.

Sources See page 108

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The Well-Equipped Shop

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Jigsaw blade changes are a snap with Freud's new FJ85. To top it off, the FJ85, which has a 6-amp motor with variable-speed control and orbital-blade action, sells for only \$120. It's a bargain!

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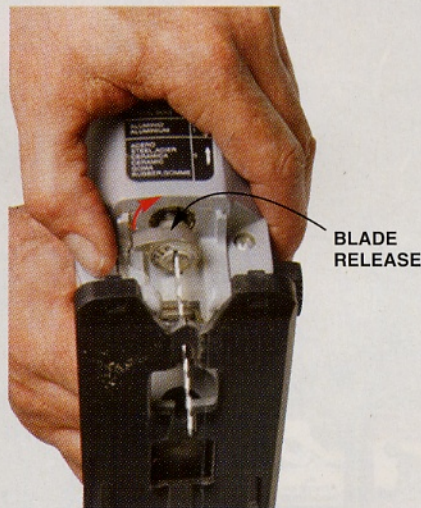


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go. When it's time to change blades, the internal spring spits out the blade like a watermelon seed. This is especially handy when a blade breaks right at the end of the blade mount, and it's too short to grab and pull out.



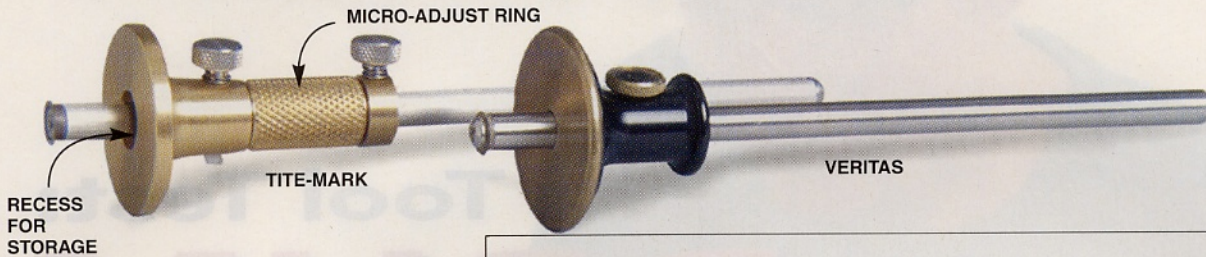
Blade changes are easy because of the FJ85's quick-release mechanism.

The FJ85 is also outfitted for dust collection, a feature you don't find on many other jigsaws. The system doesn't work great, but it's better than nothing.

The FJ85 has a removable plastic base to protect material that would get scratched by its metal base. What it *doesn't* have is a blower to keep the work area clear. You'll have to provide your own hot air!

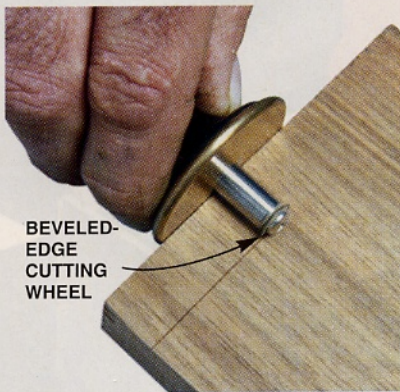
Sources See page 108

Our Favorite Marking Gauges



Marking gauges scribe reference lines on wood for saw and chisel cuts. If you want to cut dovetails by hand, you've got to have one. Gauges that score the wood with a beveled-edge wheel, like the ones shown here, work best. Pin-type gauges merely scratch the wood and can't mark a crisp line across the grain. Knife-type gauges mark crisply, but they require initial and frequent sharpening. Wheel gauges are ready to go right out of the box.

A no-frills marking tool you can depend on, like the Veritas (above right), costs \$20 or less (see Sources, page 108). If your mitts tend to fumble with small parts and fine adjustments, the Tite-Mark (\$80) is worth a close look because it has a great micro-adjust mechanism. **AW**



The wheel cuts like a knife, incising crisp lines with or across the grain. Its rounded shape won't catch or dig in. The bevel holds the gauge against the stock so the lines don't wander. The wheel doesn't rotate during use, but you can reset it to get a fresh edge.

Sources See page 108

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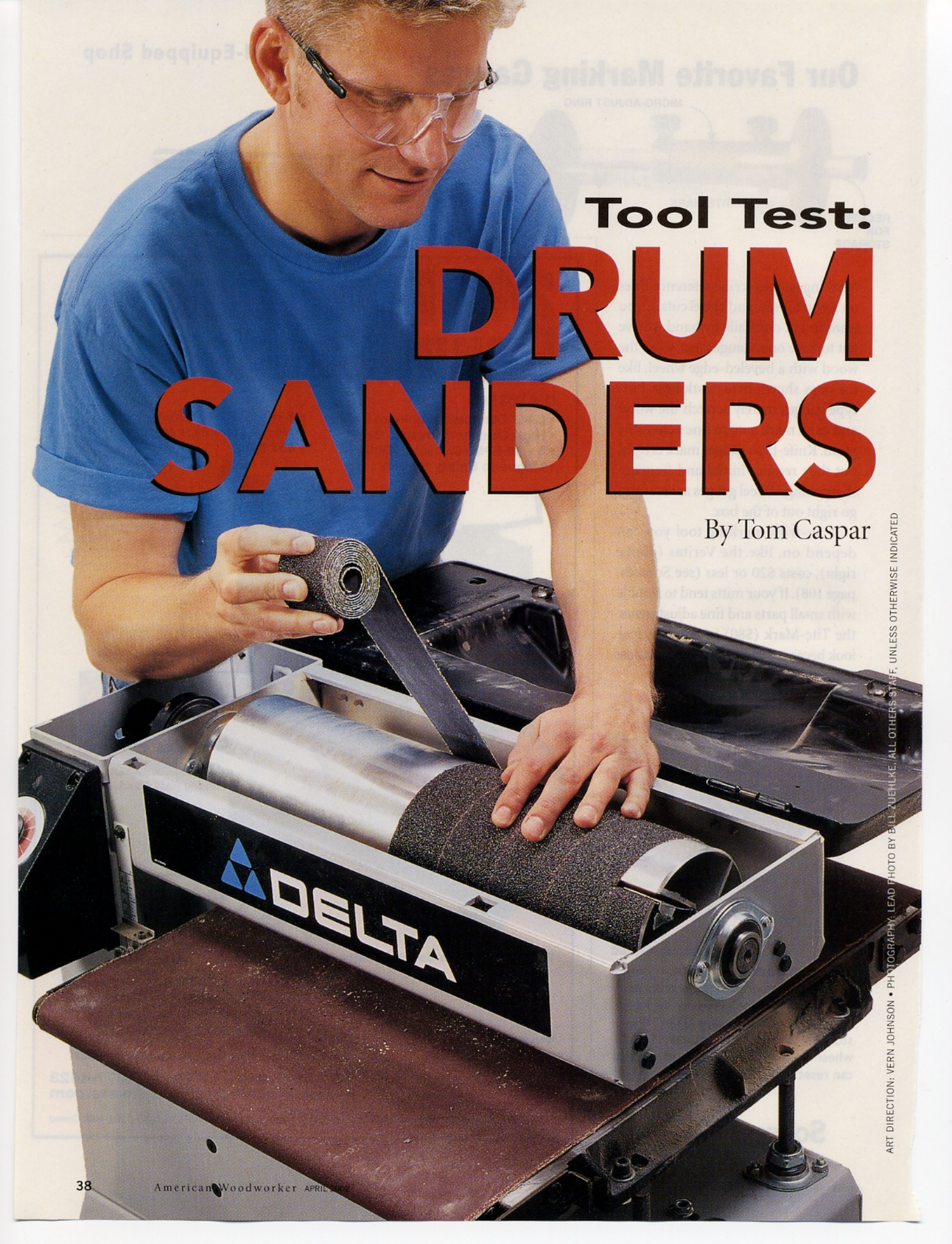


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Tool Test: DRUM SANDERS

By Tom Caspar

ART DIRECTION: VERN JOHNSON • PHOTOGRAPHY: LEAD PHOTO BY BILL ZUEHLKE, ALL OTHERS STAFF, UNLESS OTHERWISE INDICATED

Raise your hand if you like to sand. Anybody? I didn't think so. We all like to get this chore over with as quickly and painlessly as possible. A drum sander may be just what you've been looking for.

We tested eight drum sanders and one basic, wide-belt sander, all priced under \$2,200 (Fig. A). That's just the tip of the iceberg when it comes to sanding machines, however. You can easily spend a lot more.

If all a drum sander does is save time sanding, is it worth it? We've heard dozens of stories from folks who have taken these machines way beyond simply sanding a board. Their uses seem limited only by your imagination. Even if you're not in the market for one today, this is a machine that's definitely worth taking a closer look at.

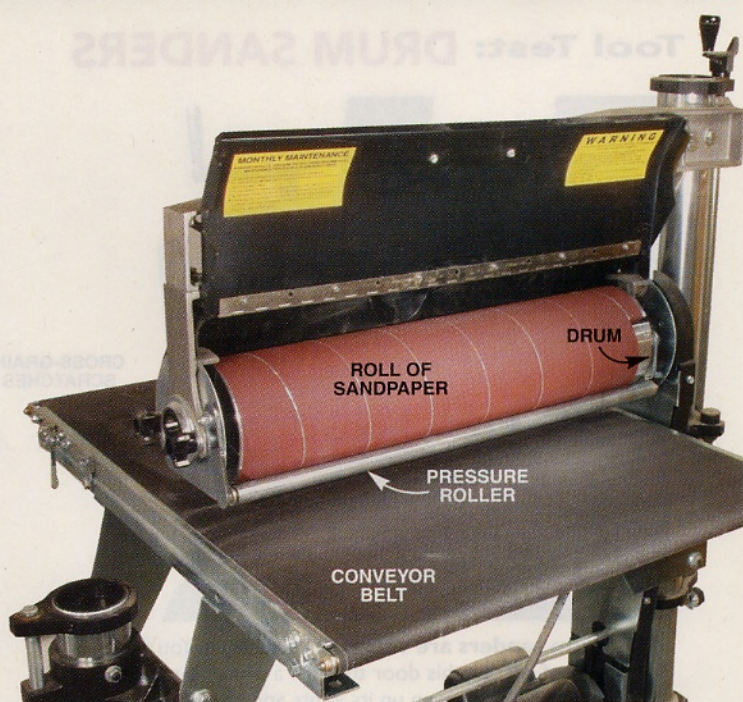
How Drum Sanders Work

Drum sanders are pretty simple machines (Photo 1). A powered conveyor belt feeds wood underneath an open box. This continuous belt is made of a non-slip material and is driven by a fairly small, slow-speed motor.

Inside the box there's typically a rotating drum powered by a much larger motor. The drum is wrapped with a continuous strip of sandpaper (Photo 2). A single grit of sandpaper won't serve all your sanding needs, of course. You need easy access to the drum and a quick-change system to install rolls of coarse, medium and fine paper.

On either side of the drum, there's a pair of pressure rollers. Unlike a planer, these rollers are not powered. Their job is to press the wood against the conveyor belt. Without the pressure rollers, the sanding drum would shoot your wood right out of the machine!

Drum sanders come in three different styles: open-end, closed-end and double-drum. Before we cover the differences between these styles, let's take a look at what they have in common.



1 Four major parts keep a drum sander humming. The drum itself is a long tube wrapped with sandpaper. A powered conveyor belt feeds boards under the drum. Free-spinning rollers on either side of the drum press down on the wood, holding it tight to the conveyor belt. When the board contacts the drum, friction from the belt prevents the wood from kicking out of the machine.



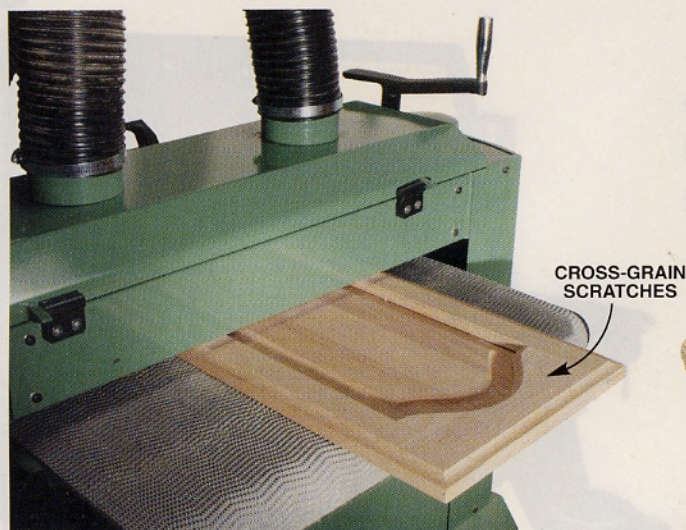
Fig. A Price of Drum Sanders in this Test

Drum sanders are fairly expensive tools. The most basic models cost about the same as a fully equipped contractor's saw. However, these machines can greatly expand the capabilities of your shop.



2 Wrap a long roll of sandpaper around the drum and you're ready to go. One grit is rarely enough to get a job done, just like in hand sanding. It's not unusual to wrap and unwrap three different grits for a single job. Choosing the right grit to start out with is crucial.

Tool Test: DRUM SANDERS



3 Drum sanders are versatile machines. You'd never think of passing this door through a planer, but a drum sander can both even up its joints and prepare it for finishing. All the sanding scratches go in straight lines, however. Further sanding by hand with a random-orbit sander may be necessary, particularly to remove cross-grain scratches.

What Drum Sanders Can and Cannot Do

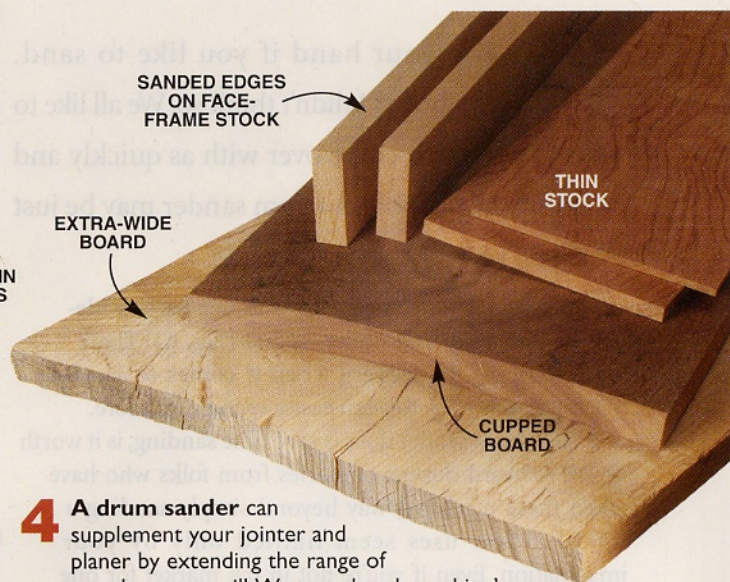
Drum sanders have a powerful appeal (Photo 3). They are surprisingly versatile and can be the single answer to many shop problems (Photo 4). However, they can't perform miracles. Let's take a hard look at what a drum sander realistically can and cannot do.

Drum sanders have a larger range of capacity than most jointers and planers. First, there's the extra width. You can work on material from 24- to 32-in. wide with the drum sanders we tested. Second, there's the short stuff. Drum sanders can safely manage material as small as 2-1/4- to 9-in. long. Third, very thin pieces are no problem. For example, you can remove bandsaw marks from 1/16- to 1/8-in.-thick resawn wood.

Surfacing rough lumber is something of a mixed bag with a drum sander. The extra width capacity can be a godsend for super-wide boards. Some drum sanders can take the cup out of a board (warp across the width), but few work well in removing bow and twist (warp down the length). A long-bed jointer is far better for these jobs.

Jointers and planers remove wood relatively fast, while drum sanders have a much slower pace. They rarely take off more than 1/64 in. at a time.

A drum sander can certainly produce a smooth surface, but not necessarily a uniformly flat one. It's not unusual for a drum sander to create very shallow dips across the width of the stock at random intervals. These dips are hard to see,



4 A drum sander can supplement your jointer and planer by extending the range of wood you can mill. We tested each machine's ability to surface extra-wide boards, remove the cup from warped boards and panels, remove saw marks from surfaces for glue-up (such as the edges of face-frame stock) and accurately thickness thin, resawn boards.

but they'll show up under a finish. They can be sanded out by hand later.

Tear-out is never a problem with drum sanders. You'll get a smooth surface whether you're surfacing highly figured wood or evening up a top composed of boards with grain that goes in opposite directions.

Drum sanders can remove saw marks from the edges of face-frame stock, but some round over those edges. (Crisp, square edges, such as the kind you get on a jointer, are necessary for tight, invisible glue joints.)

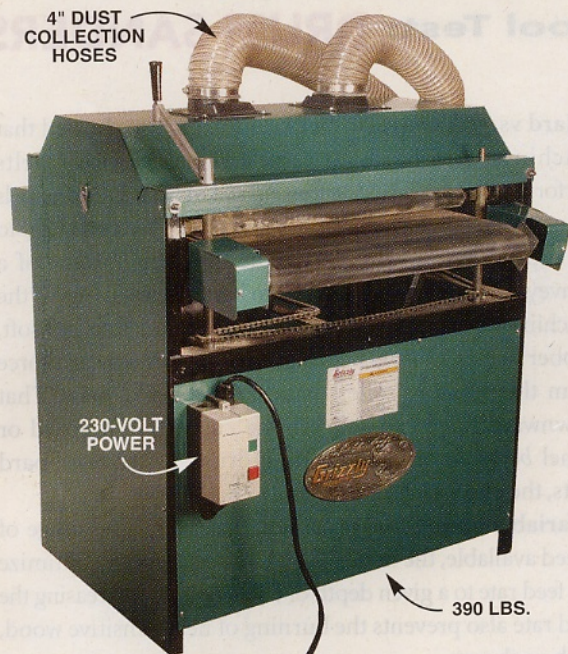
Drum sanders can save a heck of a lot of time in finish sanding, but most of the time you have to finish up sanding by hand. All drum sanders leave a visible straight-line pattern of scratches. These scratches may not be objectionable on coarse-grained wood, such as red oak, but they stand out like a sore thumb on fine-grained wood, such as hard maple.

Extra capacity and no tear-out are BIG benefits of all drum sanders.

Shop Requirements

Is your shop ready for a drum sander? There are a couple of things to consider that may cost you some extra bucks (Photo 5). First, drum sanders are one of the few machines that absolutely, positively must have adequate dust collection, or they just won't work. A portable 1-hp two-bag dust collector (\$250 to \$350) hooked directly to the machine is a minimum.

You may have to upgrade the electrical service in your shop. You'll need at least 20-amp service to your drum sander, maybe more (see Chart, page 50). Your dust collector



5 Is your shop ready to handle a drum sander? You'll need a 1-hp or larger dust collector, a 20-amp or larger circuit and possibly 230-volt service. The larger models also take up quite a bit of floor space and can be very heavy to move.

should go on a circuit other than the one used for the sander. Many drum sanders require 230-volt service for their huge motors.

Finally, take into account the size and weight of these machines before purchasing one. All drum sanders can be put on mobile bases, but when you add infeed and outfeed tables they take up lots of room; far more than a portable planer. Some machines are very, very heavy. Getting one up or down stairs is a real challenge.

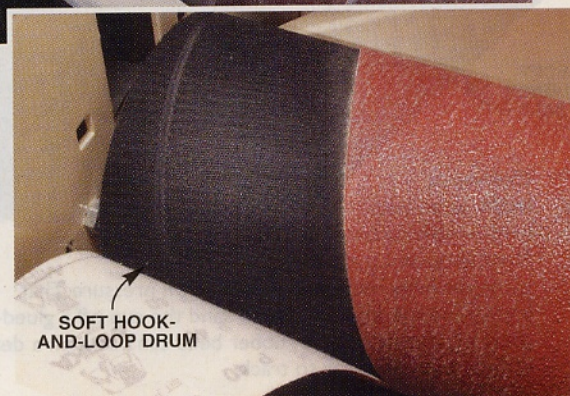
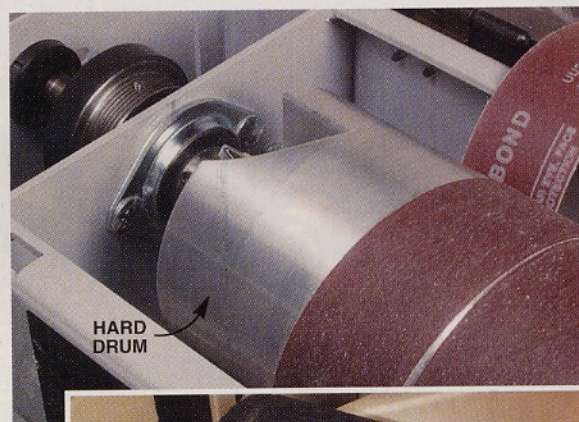
Performance Features

We've divided the features of drum sanders into two broad categories: performance and convenience. Performance features affect the results you get; convenience features affect how user-friendly the machine is. You'll find a report card on how each machine fared in the chart on pages 50 and 51.

Drum sanders come in three styles, but the style should not affect the performance. We found that *all* the machines could produce a surface free of ripples and with barely detectable sanding marks, if operated with care.

In fact, proper operation is more important than any single feature. To get the best results, you've got to choose the right grit of sandpaper, set the right depth of cut and dial the conveyor belt to the right speed. Brother, did we make a lot of mistakes at first! We'd expect anybody using a drum sander for the first time to have trouble too, regardless of the model. Skill comes with experience.

All drum sanders require a 1-hp or larger dust collector and a 20-amp circuit.



6 Sanding drums may have either a hard or soft surface. Hard drums make a precise, flat surface on your wood. Soft drums produce a surface with fewer visible sanding scratches, but they round over edges. That's potentially a problem if you're sanding a surface for gluing, such as a stacked lamination or the edges of a face frame.

We expected every machine to produce a board or panel with crisp (not rounded) edges and no snipe. In search of the perfect board, our tests showed that the following features affected the performance of each machine.

- **Adjustable pressure rollers.** All drum sanders produce snipe under certain conditions. The key to reducing snipe is to fine-tune two pressure-roller settings: height relative to the drum and foot-pounds of pressure. (Height is more important than pressure.) Unfortunately, not all machines have these adjustments.

- **Hard drums vs. soft drums.** Hard drums (Photo 6) excel at producing boards of a precise, uniform thickness. Soft drums produce a surface with slightly less detectable sanding scratches.

Our tests showed that hard drums generally made flatter edges on face-frame stock than soft drums. Does it matter for other applications? Probably not if you're sanding a door or a top. But it does matter if you're sanding surfaces that will be glued together, such as the laminations in a turned bowl.

Tool Test: DRUM SANDERS

HARD, ABRASIVE COVERED BELT

SOFT-RUBBER BELT

7 Conveyor belts come with hard or soft surfaces. Hard, abrasive-covered conveyor belts require less hold-down pressure. That improves a machine's ability to sand the cup off a glued-up panel or thin stock. Soft-rubber belts can't scratch a delicate surface and are easier to track.

• **Hard vs. soft conveyor belts.** Our tests also showed that machines with hard, abrasive-coated conveyor belts performed better at taking the cup out of boards and panels than machines with soft, rubber-coated or PVC belts (Photo 7), especially on thin stock. The non-slip surface of a conveyor belt keeps a board from being thrown out of the machine by a sanding drum. All the belts work fine, but soft, rubber belts and PVC belts require more downward force from the pressure roller than hard, abrasive belts. That downward force can squeeze the cup out of a board or panel *before* it hits the sanding drum. When the board exits, the cup returns.

• **Variable-speed conveyor belt.** The wider the range of speed available, the better. Variable speed lets you optimize the feed rate to a given depth of cut (Photo 8). Increasing the feed rate also prevents the burning of heat-sensitive wood, such as cherry.

Convenience Features

Some woodworking machines are a dream to run; others are a nightmare. The results may be the same, but which do you look forward to using? The following features make a drum



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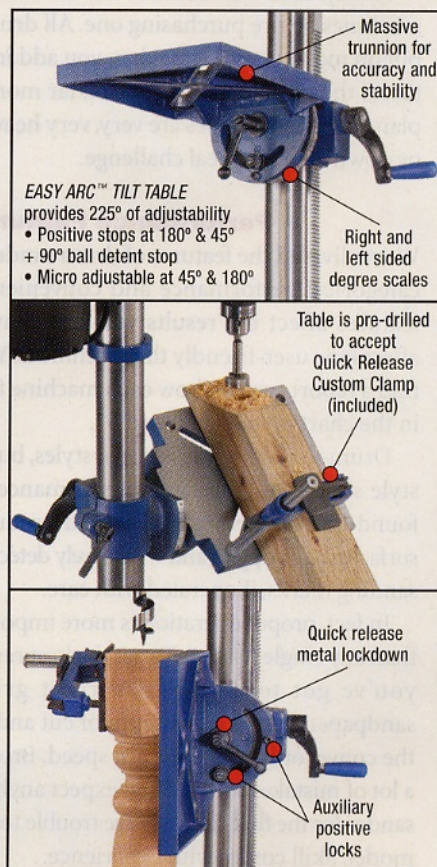
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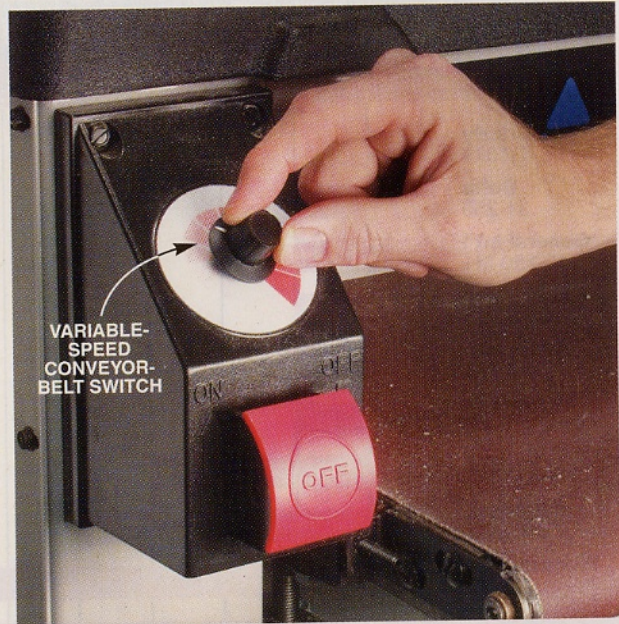
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sander user-friendly. See the chart on page 51 for our ratings.

- **Speed and power.** In commercial shops, speed is essential to making a profit and may legitimately be the single most important factor in choosing a drum sander. For home shops, speed is a convenience, but not a necessity. Larger motors generally mean you can get the job done faster (Fig. B, page 44). You can take a deeper cut with coarse and medium grits and set the conveyor belt to a faster speed.
- **Sandpaper attachment.** Each drum sander has a slightly different method of attaching the sandpaper to the drum. Once we got the hang of it, most were quite easy to use (Photo 9). Some required more dexterity than others, however.
- **Good manual.** Usually we don't make a big deal about owner's manuals because there are many other good sources of information. Not so with drum sanders. When things go wrong with your setup or technique (and they will!), you'll want to turn to a good troubleshooting guide.
- **Depth-of-cut adjustment.** Very small adjustments to the depth of cut of a drum sander can make a big difference in results. Typically, you advance a crank handle only one-quarter or one-eighth of a turn. That level of precision calls for a crank that's easy to turn and large in diameter.



- 8** A variable-speed dial for the conveyor belt lets you fine-tune the performance of your machine. Smaller drum sanders have a slower maximum rate of speed than larger machines, so you can't push work through as fast.

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Tool Test: DRUM SANDERS

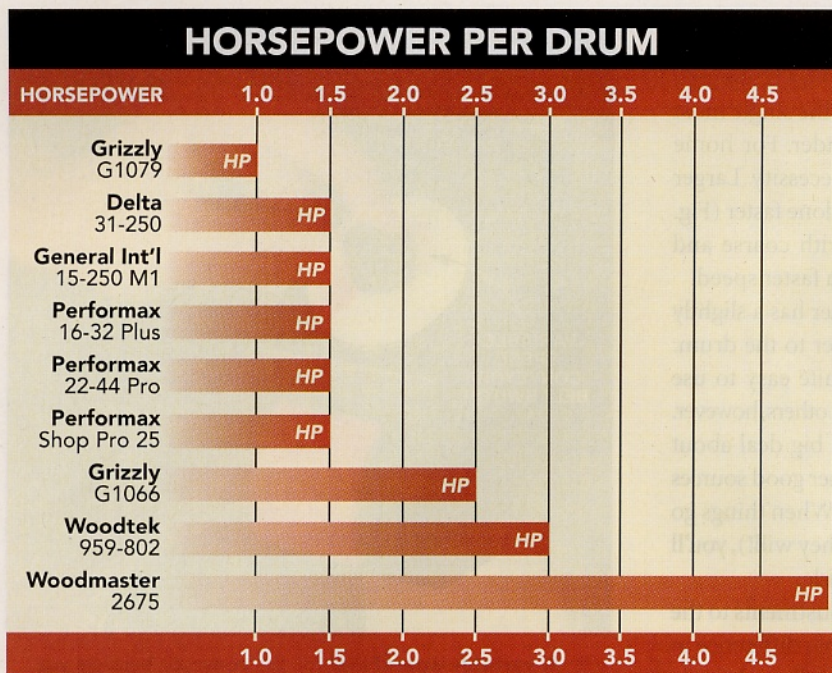


Fig. B There's a wide range of power in drum sanders. More power generally means less sanding time. You can run boards at a faster feed rate and be more aggressive in the amount of stock you remove using coarse and medium grits.

• **Independent switches.** We preferred machines with independent switches for the conveyor belt and drum. This feature helps you judge a critical setting: the depth of cut on the first pass. That's best done with the conveyor belt on and the drum off, but there are other ways. (Scales aren't precise enough on any machine to simply dial in a setting for the first pass.)

• **Drum-angle adjustment.** Don't count on your drum sander being perfectly set up out of the box. You'll have to adjust the tilt of the drum so it's perfectly parallel to the bed. That's easy on some models and not so easy on others. You may use this feature often on open-end machines (Photo 10). When you sand stock that's wider than the drum, you should tilt the drum a few thousandths of an inch higher on the outboard end to avoid lap marks. Tilt the drum back parallel when you're done.

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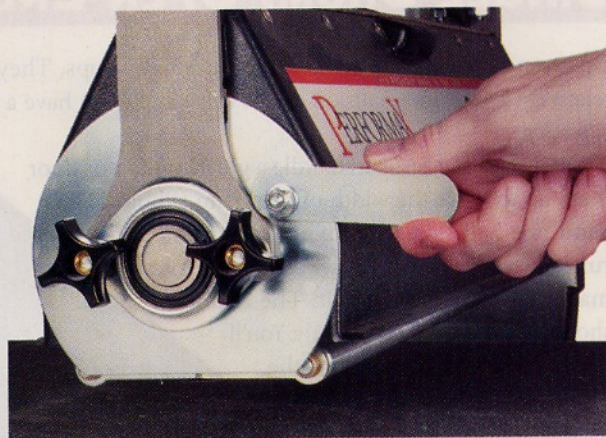


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9 Changing paper on a drum sander can be a real chore. We preferred designs that make the job easy, such as this Performax tool (it holds the spring-clamp open) and the hook-and-loop system on the Woodmaster.

10 Drum sanders can be finicky to set up. We like machines with multiple points of adjustment that are easy to get at, such as this Performax drum-angle adjustment handle.

• **Double-drum height adjustment.** The rear drum of a double-drum machine should be easy to adjust. The difference in height between the front and rear drums has to be set just so for optimal performance. Coarse grits require a larger height difference than fine grits. We'd prefer a scale to let you know where you're at in making this adjustment, but

none of the machines we tested had one.

• **Extension tables.** Infeed and outfeed extension tables help you avoid snipe on long, heavy stock. Roller stands are impractical for most machines because the bed, not the drum, is adjusted up and down. Some machines don't offer extension tables at all.

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with features such as a large working surface, powerful American made motor and sturdy construction you'll see we didn't spare quality to make an economical table saw

- Miter gauge with T-slot groove • Cast iron extension wings
- Magnetic switch • Quick release plug connection on motor
- 4" dust collection hook up • Large 27" x 40" table
- Beveled front table edge for smooth miter gauge operation
- 1 1/2 HP American made motor
- Comes with VEGA® U-26 fence (shown)



BW-15BS Bandsaw

don't let its low price fool you, this amazing bandsaw is designed and built to provide trouble free operation cut after cut.

- Heavily ribbed, cast iron c-frame
- Cast aluminum wheels with rubber tires
- Non-rocking steel floor stand
- Miter gauge • Motor mounted directly to cast iron frame for smooth operation
- 3/4 HP motor
- Two blade speeds: 2000 or 2600 SFM



BW-15P Planer

economically priced yet built like big professional planers, it offers absolutely vibration free finishes

- 3 HP motor • 3 v-belt drive from motor to cutterhead • Table moves up and down - cutterhead stationary for smoother cuts
- Sturdy 4 leg non-rocking stand
- Extended stock support rollers
- Anti-kickback fingers across entire width
- 3 spring chip breaker • Heavy cast iron construction • Magnetic switch
- Jackscrew knife adjustment

BW-6R Jointer

Acclaimed a "best buy" among 6" jointers by a professional woodworking publication

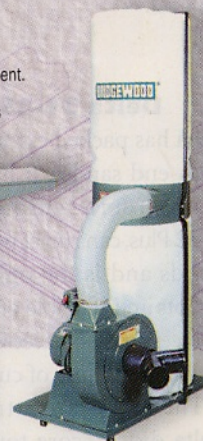
- 3-knife cutterhead • Jackscrew knife adjustment
- New fence tilts both ways, quick and easy adjustment.
- 3 positive stops • Enclosed stand • 1 HP motor
- Rabbeting table and ledge • Surface ground tables
- Pushbutton switch
- Cast iron wheels



BW-002A Dust Collector

portable, compact unit can solve your dust collection problems at a very low cost

- Two HP, single phase motor • 1059 CFM • 43.5 gal. collection bag
- Bag attached with quick release metal straps • Metal impeller (not plastic)
- One 5" or two 4" dia. hose inlets • 1 micron filter bag



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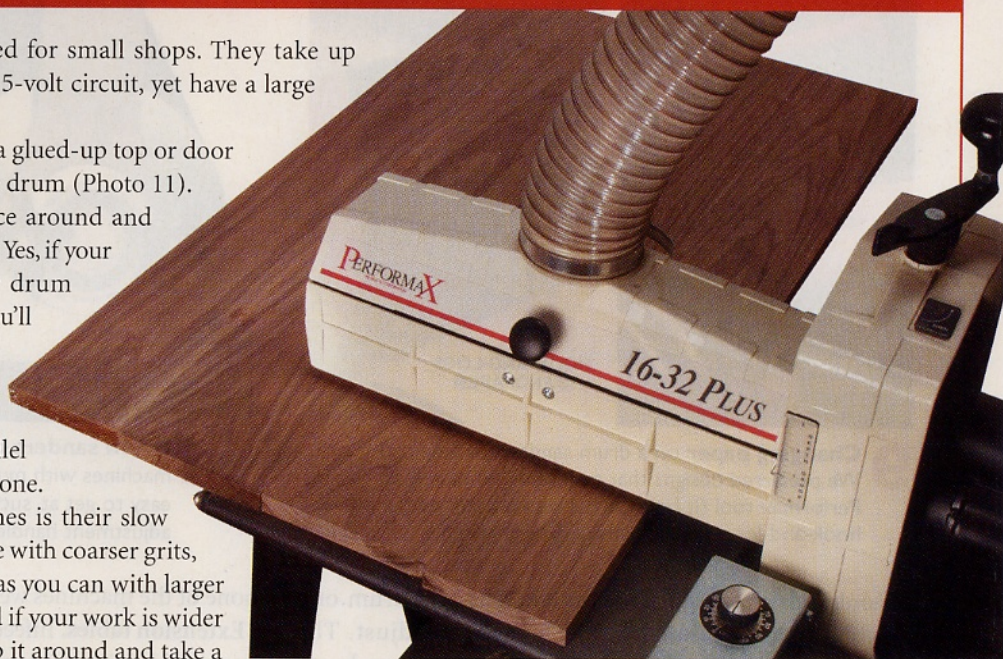
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SINGLE-DRUM, OPEN-END SANDERS

Open-end sanders are well suited for small shops. They take up relatively little room, run on a 115-volt circuit, yet have a large capacity.

Open-end sanders can handle a glued-up top or door that's up to twice the width of the drum (Photo 11). Sand one half first, turn the piece around and run it through again. Does it work? Yes, if your machine is tuned up right. The drum should be tilted ever so slightly. You'll make a very slight crown in the center, but you won't get any overlap marks. You can readjust the drum to sand perfectly parallel with the table again when you're done.

The downside to these machines is their slow speed. You can't take a very big bite with coarser grits, nor can you feed the work as fast as you can with larger machines with bigger motors. And if your work is wider than the drum, you do have to flip it around and take a second pass.



11 Open-end sanders can handle stock that's up to twice the width of the drum.



PHOTO COURTESY OF MANUFACTURER

Delta 31-250; \$810

Delta has packed extra features into its open-end sander. It has an additional 2 in. of drum length over the Performax 16-32 Plus, can run at two different drum speeds and is the only machine that accepts an inflatable outboard drum as an accessory. This accessory is perfect for freehand sanding of curved parts.

The extras are attractive, but the Delta didn't score top marks on the basics. The rollers aren't adjustable, the table is awkward to level and attaching the sandpaper requires good dexterity and finger strength. Its motor seemed a bit weaker than the motor on the Performax 16-32 Plus and it draws fewer amps.



PHOTO COURTESY OF MANUFACTURER

Performax 16-32 Plus; \$800

This machine has less capacity than the Delta 31-250, but it scored higher on our performance and convenience tests. It can do everything a drum sander should be able to do except turn out a high volume of work in a short time.

Unlike all the other drum sanders, this machine has a fixed bed and a drum that moves up and down. That means you can use roller stands for additional support of large stock. We took that idea one step farther and mounted this sander in our Ultimate Tool Stand (AW #82, page 48). Now it can handle big, wide and heavy stock almost as well as the larger machines.



PHOTO COURTESY OF MANUFACTURER

Performax 22-44 Pro; \$1,950

Extra capacity in an open-end machine comes at a pretty stiff price, but this beefed-up machine will handle a wider top than any other we tested. The adjustment for tilting the drum worked quite well.

In addition to extra capacity, the strength of this classic machine is its versatility. It scored well in all of our tests except one category—speed and power. We wish a version with a bigger motor was available.

The casters (\$70) and extension tables (\$100) shown above are optional accessories. This machine is also available in kit form for about \$1,350.

SINGLE-DRUM, CLOSED-END SANDERS

Both ends of the drum are supported in these sanders. This allows the drum to be longer than the open-end machines. You can sand a panel up to 25-in. wide in one pass (Photo 12). That's wide enough for most cabinet doors and sides, but not wide enough for large tabletops. For these, you have to sand one half at a time and glue the two halves together.

These machines require less adjustment than open-end sanders. Once you've set the drum parallel to the bed, you're done.

This category is where the power wars really start. The machines we tested are the two least expensive machines in a large field where horsepower, capacity and price go up and up (to over \$4,000).

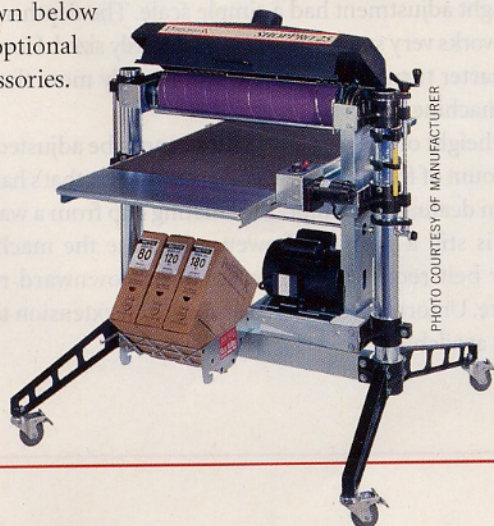
12 Closed-end sanders can handle stock up to 25-in. wide in one pass.

Performax Shop Pro 25; \$2,200

Although limited in power, the Shop Pro 25 can handle all the jobs we asked of a drum sander. It's ideally suited for a small, non-production shop where each project may require a new task. This sander will surface oversize rough lumber, even up cabinet sides and precisely sand resawn, thin stock. All that and it only requires a 115-volt circuit.

The advantages of this sander over its close cousin, the open-end Performax 22-44, are extra width for sanding in a single pass and fewer adjustments to worry about. Unlike an open-end machine, the drum is always set parallel to the bed. Once you've tuned up your machine, you're always good to go.

The casters (\$70) and extension tables (\$100) shown below are optional accessories.



Woodmaster 2675; \$2,000

This machine is built like a Sherman tank. It's been in production for many years with the same basic, proven design. You want power? This is your sander. You can hog off wood in the coarse and medium grits with ease, even at full width. And you can run the conveyor belt at a higher speed than most other machines. This robust machine handles big and heavy stock better than any other we tested.

Changing paper is easy with Woodmaster's hook-and-loop system. There are no slots or springs to mess with, but you do have to wrap strapping tape around one end of the drum.

The hook-and-loop system has its drawbacks, however. We had to stop the sander and re-wrap the paper after a few passes to take up any slack. The paper is a bit more expensive and its backing cushions the drum, making it softer. Edges can get rounded, which isn't good for surfaces that will be glued together.



DOUBLE-DRUM SANDERS



13 Double-drum sanders save sanding and set-up time by using two different grits in one pass.

The whole idea of a machine with two drums is to get work done twice as fast (Photo 13). You can put the same grit on both drums or a medium grit on the front drum and a fine grit on the back drum. With the two-grit setup, you can take a coarse-grained species of wood, such as red oak, straight from the planer and pretty much have it ready for hand sanding after only one or two passes. All this work requires a lot of power. Double-drum machines have 2-hp or larger motors and require 230-volt service.

The downside to having two drums is that setup is much fussier. The difference in height of the rear drum relative to the front drum has to be just so, and that difference varies from grit to grit. We're talking thousandths of an inch here. For optimum performance, drums with coarse grits should have a larger height difference than drums outfitted with fine grits. All this bother is only a one-time deal if you leave your double-drum machine set up with the same two grits all the time. But if you use a wide variety of grits, you'll want a machine with an easily adjusted rear drum.

Grizzly G1079; \$750 & Grizzly G1066; \$1,100

These are very similar machines. They differ only in capacity and power, and you get a lot of power for the money with the G1066. If the idea of a double-drum machine appeals to you, these are the least expensive models out there. They're good values for a shop that can put them to a dedicated use, such as sanding doors or parts for assembly. One set of grits should be all you need.

There are some downsides to the pair, however. It's a challenge to change the paper. The conveyor belt does not have variable speed or an independent on/off switch. The conveyor belt is made of PVC and requires a fair amount of hold-down force, so these machines don't do well at removing cup from a warped board or panel. It's difficult



General International 15-250 MI; \$1,700

This is a serious new entry into the field of drum sanders. It's more expensive than the Grizzlys and comes with better features (changing paper is much easier, for example), but it's still priced well below other double-drum sanders.

The conveyor belt is variable speed, but doesn't have an independent on/off switch. You can adjust the height of the rear drum, but we wish the height adjustment had a simple scale. The depth-of-cut crank works very smoothly and is generously sized. However, one quarter turn raises the bed significantly more than on other machines.

The height of the pressure rollers cannot be adjusted, but the amount of force they deliver can be. At least that's half the



battle in dealing with snipe. Eliminating cup from a warped board is still a problem, however, because the machine's rubber belt requires a fair amount of downward roller pressure. Unfortunately, infeed and outfeed extension tables are not available.

the height of the rear drum relative to the front drum. These are the only machines we tested with drums that rotate in the same direction as the conveyor belt, making a climb cut rather than a shearing cut. This increases the chances of the drum skipping across the surface of a board if you take too deep a cut.

Recommendations

A drum sander can be a real time-saver. It's capable of doing far more than just smoothing glued-up panels, but it's not a replacement for a planer and jointer. You can get along fine without a drum sander, but buying one will surprisingly expand the range of woodworking you can do in your shop.

Whether it's an open-end, closed-end or double-drum machine, no single type of drum sander is the best. Each design can fit very well in different kinds of shops.

Two yardsticks can help you sort out the field: performance and convenience. We've graded each machine by these measures in the chart below. Unfortunately, it's clear that no single machine scores high in all categories. Before you buy a drum sander, the question to ask yourself is whether you'd rather have a machine that performs many jobs very well, but slowly, or a machine that performs fewer jobs very fast.



Performax 16-32 Plus; \$800

This compact machine is easy to use and performs a wide variety of jobs well.



Performax 22-44; \$2,200

This open-end sander has a wider range of capacity than any other we tested.



Woodmaster 2675; \$2,000

You get amazing power and speed with this closed-end sander, a perennial favorite.



General International 15-250M1; \$1,700

This new double-drum machine gets the job done quickly without much fuss.

	Brand	Model	Street price ✓	SHOP REQUIREMENTS			CAPACITY			SPECS				
				Volts	Circuit amps	Lbs.	Max. width*	Max. thickness	Min. length 3/4" bd.	Hp. of main motor	Main motor amps	Hard or soft drums	Conveyor belt type	Conveyor belt speed Δ
OPEN END	Delta	31-250	\$810	115	20	190	36", 18"	4"	7"	1-1/2	13	hard	hard	0 - 12
	Performax	16-32 Plus	\$800	115	20	145	32", 16"	3"	2-1/4"	1-1/2	14	hard	hard	0 - 10
	Performax	22-44 Pro	\$2,000	115	20	295	44", 22"	4"	2-1/4"	1-1/2	14	hard	hard	0 - 10
	Woodtek	959-802	\$1,140	230	30	300	24", 12"	5"	8"	3	18	hard †	hard	0 - 12
CLOSED END	Performax	Shop Pro 25	\$2,200	115	20	310	25"	4"	2-1/4"	1-1/2	14	hard	hard	0 - 10
	Woodmaster	2675	\$2000	230	30	620	25"	5-1/4"	7"	5	20	soft	soft	0 - 20
DOUBLE DRUM	General Int'l	15-250 M1	\$1,700	230	20	463	24"	5"	5"	3	15	hard	soft	3 - 20
	Grizzly	G1079	\$750	230	20	292	16"	4-1/4"	9"	2	12	hard Ω	hard ♦	11
	Grizzly	G1066	\$1,100	230	30	389	23-1/2"	4-1/4"	9"	5	25	hard Ω	hard ♦	11

✓ excludes shipping

† Hard rubber

* open-end machines: widest panel that may be sanded in two passes, width of drum

Ω Hard front, soft rear

♦ Hard PVC

Δ Feet per minute

You Should Also Know About...

We reviewed sanders that were priced under \$2,200, but there are many more expensive models available. For \$2,500 to \$10,000, you can get closed-end or double-drum machines with more powerful motors and wider capacity. These machines allow you to process work faster than most of the sanders we tested, but the results may not be much different. By and large, these sanders require 30-amp service and a 230-volt circuit.



RBI Model #900-1440
38-in. closed-end sander
\$3,750, (800) 487-2623.



Woodtek 959-802
12-24-in. open-end,
wide-belt sander
\$1,140.

Two new double-drum sanders were not available for our test, the Grizzly 24-in. #G1066Z, \$1,600 and the Woodtek 25-in. 109-352, \$1,200.

If you're looking for both faster and better results from a sander, a wide-belt machine may be the right fit for you. With the single exception of the Woodtek open-end sander included in our chart, they start at about \$3,100. Wide-belt sanders use a single sleeve of sandpaper rather than a continuous roll. That makes paper changing a bit faster, as shown at left. Wide-belt sanders also require at least 30-amp service and a 230-volt circuit.

Many wide-belt sanders leave a less-visible scratch pattern than any drum sander. Their heads oscillate back and forth, so you don't get rows of straight-line scratches. The belt is pressed to the wood by a large, flat platen rather than by a round drum, so you won't get random dips. (The Woodtek model doesn't have either feature, however.) **AW**

PERFORMANCE					CONVENIENCE										CONTACT	
Overall grade	Anti-snipe adjust.	Remove cup	Maintain square edges	Large heavy stock	Overall grade	Speed and power	Paper attachment	Manual	Depth-of-cut adjust	Independent switches	Drum angle adjust	Rear drum adjust	Ext. tables avail.			
B	C	B	A	C	B+	B-	B	A	B+	Yes	B	NA	Yes	(800) 438-2486		
A-	A	A	A	C	A-	B-	A	A+	A-	Yes	A-	NA	Yes	(800) 274-6848		
A	A	A	A	B	A	B	A	A+	B	Yes	A+	NA	Yes	(800) 274-6848		
B	B	B	B	B	B	B	A-	B	B-	No	B+	NA	No	(800) 645-9292		
A	A	A	A	B	A	B	A	A+	B	Yes	NA	NA	Yes	(800) 274-6848		
B+	C	B	B	A	A	A+	A	B+	A	Yes	NA	NA	Yes	(800) 821-6651		
B+	B	B	A	B	A-	A-	A-	B-	A+	No	NA	B	No	(514) 326-1161		
B	B-	B	B	B	B-	B	C	B+	B	No	NA	C	No	(800) 523-4777		
B	B-	B	B	B	B	A-	C	B+	B	No	NA	C	No	(800) 523-4777		

NA= Not applicable

Tips For Finishing Cherry

*Oil it, spray it, shellac it, or glaze it.
This is how to make cherry look great.*

Cherry is gorgeous wood, but as you've probably discovered, it can be nasty to finish. Cherry boards come in all different colors, the sapwood and heartwood don't match, it can look really blotchy and it darkens as it ages.

Take advantage of my 28 years of experience with cherry. Here's everything I've learned about choosing lumber, getting rich color, a uniform appearance, and making a new cherry piece look 100 years old.

Color Varies from Board to Board

To make finishing easier, choose boards that look the same. Some suppliers sell boards from the same tree together, to ensure a good match. Usually, though, you'll be on your own.

If you plan to use solid cherry along with cherry plywood, stand the solid stock against the veneer in good, natural light, so you can compare the colors. Wetting the surfaces with mineral spirits is another way to get a true indication of color.

If you can't find enough boards of the same color for your entire project,

group similar ones together for the various parts. Everyone will see that single off-colored board in the top, but no one will notice if one side of a cabinet is a slightly different color than the other.

Cherry Darkens Over Time

Cherry's color deepens from a pale pinkish-tan to a deep red-brown as a result of its exposure to air and light. The color change is so rapid at first that within hours, a partially covered board can develop a shadow line that can be hard to sand out. It's important to keep freshly planed boards either completely covered or completely exposed.

After the first couple of weeks, darkening becomes more gradual. Most finishes will slow cherry's color change, especially ones with UV blockers (check the label), but they don't stop it. At first, linseed and tung oil finishes give cherry a deeper, richer appearance than film-forming finishes like shellac, lacquer and polyurethane (pages 54 and 55). But after a year or so, they'll all look pretty much the same.

If you want to give cherry a dark color right away, don't use oil stain. It

colors cherry's pores and makes it look unnatural. Colored glazes or finishes using chemical reactions work best (pages 56 through 58).

Sapwood and Heartwood

The difference between cherry's white sapwood and rosy-tan heartwood becomes more distinct over time. The heartwood darkens, but the sapwood doesn't. The best way to deal with sapwood is to cut it off, but it *can* be finished to blend with the heartwood (see Sidebar, page 57).



ART DIRECTION: VERN JOHNSON • PHOTOGRAPHY: LEAD PHOTO BILL ZIEGLER, ALL OTHERS STAFF



Thirsty Spots and Curly Figure

Most cherry boards contain extra-absorbent spots and pockets of curly figure that are more distracting than spectacular. With both “problems,” finishing results in a mottled appearance. To some, this is part of cherry’s inherent beauty; to others, it just looks blotchy. Before you choose a finish, check your boards for mottling by wiping them with mineral spirits.

Choosing a Finish

There are two types of finishes for sealing and protecting wood: Those that dry to a hard film and those that don’t.

Film-forming finishes can be applied by wiping, brushing or spraying. Each layer you apply builds the thickness of the film. Finishes made from drying oils soak into the wood’s pores, but don’t harden enough to form a surface film. They have to be wiped, because

you can’t leave any on the surface. On cherry, drying oil finishes emphasize a mottled appearance. Film-forming finishes, like shellac, lacquer and polyurethane, minimize it. Polyurethane disguises mottling and curly figure the best, but it gives cherry less depth than shellac or lacquer.



WIPE-ON DRYING OIL

OIL FINISH GIVES CHERRY A RICH TONE, because of its amber color, but the results are unpredictable. Cherry often absorbs oil unevenly, and parts that absorb a lot of oil look darker. The result is a mottled appearance. You'll either see this as part of cherry's appealing character or as unattractive blotches.

Tung oil and boiled linseed oil soak into the wood, lodging in even the tiniest pores. This makes cherry's super-absorbent spots and curly figure stand out. The deep-amber color of these oils amplifies the effect. If you like mottled cherry, use a drying oil finish.

Wipe-ons are the most worry-free finishes to apply. They're dust-free and you don't have to contend with drips, sags, or brush marks. Wiping can be tedious work, though, and you'll have to safely dispose of oil-soaked rags.

Brush, pour or rub the oil on the wood, according to the manufacturer's directions. These finishes are usually rather thick, but heating them makes them less syrupy and easier to apply (photo at right). Wipe all excess oil from the surface. After the first coat is completely dry, smooth the surface with very fine sandpaper or steel wool and apply a second coat. Once the wood has a uniform sheen, additional coats aren't necessary.

Most wipe-on finishes are blends of oil and varnish, so they're actually film-forming finishes. These blends also contain solvents to make them easy to apply and driers to make them dry quickly. Wear gloves, a respirator and maintain adequate ventilation.

Pure drying-oil finishes contain only tung oil or linseed oil. They have no

added driers or solvents, so they're safer to use, but they dry very slowly.

SAFETY TIP

As boiled linseed oil dries it can generate enough heat to cause a pile of oil-soaked rags to catch fire spontaneously. Spread the rags out to dry, allowing plenty of air circulation around each one (I take them outside!). It's okay to throw the stiff, dried rags in the trash.

OIL FINISH

Cost: \$14 to \$25 per qt.

Coverage: 150 sq. ft.

PROS: Amber color adds warmth and depth
Dust-, drip- and sag-free
Easy to renew

CONS: Amber color highlights mottled figure
Won't disguise color mismatches
Dries slowly
Oily rags are a fire hazard
Sapwood remains light-colored
Soaks into end grain and makes it dark



Caution: Never heat finishes on your stove.

HEAT OIL FINISH in a bath of hot tap water to make it easier to apply. Keep the oil warm by occasionally changing the water.

SPRAYED-ON FILM FINISH

FILM-FORMING FINISH KEEPS CHERRY FROM LOOKING BLOTCHY, but doesn't significantly enhance its tone. The cherry becomes richer looking on its own, as it ages under the finish. Within a year, it reaches a pretty coppery color.

Finishes that harden into a film minimize cherry's mottled appearance because they have much less color than drying oils, and they don't soak in as much. The first coat of a film-forming finish seals the wood, so successive coats lay on top of each other. Each new coat thickens the finish film.

Spraying these finishes from an aerosol can is fast and convenient. It's great for getting into corners and covering intricate shapes. Spraying also eliminates brush strokes, and no brushes or rags makes cleanup simple. But, you do have to deal with overspray and nasty fumes. At \$5 to \$8 for an 11- to 12-oz. can, it's also kind of expensive.

You can find shellac, lacquer and polyurethane in aerosol cans. I think shellac and lacquer look the best on cherry. Oil-based polyurethane dries the slowest, but it's the most durable. You can get a good-looking, durable finish by following an initial sealcoat of shellac with topcoats of polyurethane. Don't use waterborne poly. It leaves cherry looking pale and parched.

The secret with aerosol spray is to go easy (photo at right). Sanding off drips and sags from one heavy coat takes a lot more time than spraying and sanding two light coats. Wear a respirator and maintain adequate ventilation any time you spray an aerosol finish. Here are some guidelines for aerosol spraying:

1. Keep the nozzle perpendicular to the surface and spray from a consistent distance, between 8 and 10 in. away.
2. Move the can at a steady rate. Start spraying before you reach the surface and don't stop until you're past it.
3. Move your project around (you may even want to turn it upside down) to get the best spraying angle. You can spray up and down as well as side to side.
4. Spray tough-to-reach areas first and areas that are most visible last.
5. Sand between coats with 280 grit or finer paper.
6. Use a new can for the final coat. Then you won't have to worry about a nozzle that spits because it's dirty or running out of finish.

AEROSOL FILM FINISH

Cost: \$5 to \$8 per can
Coverage: 25 sq. ft.

- PROS:** Minimizes mottled figure
Seals end grain so its color matches the face grain
Fast drying (except oil-based poly)
Easy to rub out (except oil-based poly)
Polyurethane is most durable
- CONS:** Must sand between finish coats
Possible drips, runs and sags
Overspray
Requires organic-vapor respirator
Dust may stick to slow-drying polyurethane
Won't disguise color mismatches
Sapwood remains light-colored

TIP

An aerosol tip that sprays in a wide fan pattern is less likely to leave sags and runs. Just look at the nozzle. If it's round, it sprays a cone pattern; if it's rectangular, it sprays a fan. You can adjust fan-type nozzles to spray horizontally or vertically. Cans with fan-spray nozzles cost about a dollar more, but they're worth every penny.



IT'S EASY TO GET IN CORNERS with aerosols because there's no brushing or wiping. Spray and sand between each coat.

SHELLAC AND GLAZE

SHELLAC AND GLAZE ADDS RICH COLOR AND MINIMIZES BLOTCHING. Shellac seals the wood so the glaze, which is thinned oil paint, adds color evenly. You can wipe the glaze hard, or feather it, leaving more in some spots than others. Glaze is great for disguising light sapwood.

The versatile shellac and glaze process is my favorite finish for cherry. It allows you to add color wherever it's needed, in a spot, or over the entire piece. It also helps to blend mismatched cherry boards or plywood and solid cherry. It disguises light-colored sapwood and hides mottling and unwanted curly figure. You can use it to make new cherry look older, because each coat of glaze deepens the color.

The technique is simple. First, apply a thin coat of shellac (Step 1). Sand it lightly, apply the colored glaze (thinned burnt umber artists' oil color—more on this later) and wipe it off. That's it. Because the shellac has sealed the wood, the color goes on evenly, without

making the surface look muddy. Once you're satisfied with the color, topcoat with polyurethane.

If you have serious color mismatches to deal with, two-stage coloring may work best. Put a coat of golden-brown-colored dye on the unfinished cherry, before the shellac (see Sidebar, page 57). It tempers the color differences so they're easier to blend with glaze.

I like to brush shellac, but you can spray it, too. Sand each coat with 280-grit sandpaper (shellac takes about an hour to dry). Sand evenly and carefully, because glaze will accentuate any scratches and leave a dark line wherever you cut through the shellac.

Glaze is nothing more than thinned paint. I make glazes using artists' oil

colors (Step 2). Artists' oils (see Sources, page 108) contain very finely ground pigments, so they don't look muddy, and you can match just about any wood by mixing colors. Liquid glazing medium (see Sources, page 108) makes the oil color spread evenly and dry faster.

Once you apply the glaze, you have plenty of time to work with it before it dries (Steps 3 and 4). It's also reversible (Step 5). Once the glaze is dry (overnight, in good conditions), you can deepen the color with a second coat, add additional glaze selectively to camouflage bad spots or highlight details, or finish with polyurethane. As with other finishes, cherry will continue to darken underneath the glaze, although you'll hardly notice it.



STEP 1 SEAL THE SURFACE WITH DEWAXED SHELLAC (see Sources, page 108). On cherry, a single thin coat (2 lb. cut) allows some glaze to lodge in the pores. This looks odd to me, because cherry's pores aren't naturally dark. Two thin coats, sanded between, keeps color out of the pores.



STEP 2 MAKE YOUR OWN GLAZE by mixing burnt umber artists' oil color and liquid glazing medium into a medium-bodied paste. You can get both at art supply or craft stores. Don't go overboard—a little glaze goes a long way.



STEP 3 COVER THE SEALED SURFACE WITH GLAZE. It doesn't matter how you apply it or if you miss a few spots. Wiping evens things out.

SHELLAC AND GLAZE

Cost: Shellac; \$8 per qt
Glaze (artists' oil color and liquid medium); \$15
Topcoat; \$5 to \$8 per aerosol can
Coverage: A little glaze goes a long way

PROS: Rich color
Minimizes mottled figure
Goof-proof because it's reversible
Disguises sapwood
End grain matches face grain
CONS: Additional steps take extra time
Added cost
Finish topcoats necessary



STEP 4 USE TWO RAGS FOR WIPING, one that's fairly loaded with glaze and another that's fairly clean. Between the two you can feather the glaze however you want.



Step 5 (optional) MINERAL SPIRITS REMOVES GLAZE. If your glaze doesn't look right, you can take it off (before it dries) and try again.

COPING WITH CHERRY'S LIGHT-COLORED SAPWOOD

My best advice, which is to cut off all of the sapwood, isn't always practical. If you can't remove all of the sapwood, hide it on the underside or turn it to the inside whenever you can.

You can disguise sapwood with pigments or dye (photos at right). These cover-ups look best when they're fresh. Here's why: Pigments retain their color over time, but dyes fade (water-based dyes last the longest) and cherry's color changes.

If you color sapwood with dye, it'll gradually get lighter while the surrounding heartwood gets darker. Matching the sapwood with pigment works better. Over extended lengths of time, however, exposure to sunlight can actually bleach cherry, so sapwood colored with pigment will end up being too dark.

The best way to color sapwood is to tone it with diluted golden-brown-colored dye, seal the surface with shellac, and glaze over with burnt-umber-colored pigment.



DILUTED, GOLDEN-BROWN, WATER-BASED DYE (see Sources, page 108) makes dark-colored heartwood and light-colored sapwood appear more uniform. It also helps to blend unmatched boards.



STEP 1 COLOR SAPWOOD WITH OIL PAINT. First, seal the surface of the board with shellac. You may have to mix colors, to get a good match with the heartwood. Thinning isn't necessary. Brush the paint only on the sapwood.



STEP 2 WIPE THE PAINT CAREFULLY, so you tone the sapwood without adding color to the heartwood. If you mess up, remove the paint with mineral spirits and try again.

CHEMICAL REACTION

AGE CHERRY INSTANTLY by chemical reaction. It takes decades for cherry to reach the deep red-brown color prized by antique lovers. But by treating new cherry with Old Growth's aging solutions today, you could fool most experts tomorrow. The process is simple and the results are eye-popping.

If you're familiar with antique furniture, you know that aged cherry looks completely different from new cherry. It's very dark.

Finishers have been using chemicals to deepen cherry's color for eons, but the chemicals are dangerous to use and the results are unpredictable. Old Growth's aging solutions make the process safe (see Sources, page 108).

Their two-step application process is designed to produce consistent results. The first solution leaves the surface of the wood evenly covered with a special mix of ionized minerals. When the second solution is applied, a chemical reaction occurs that turns the cherry,

including its light-colored sapwood, a much darker color.

As with any finishing technique, however, it's best to test this process on scraps before using it on your expensive cherry. The results are permanent!

You can decrease the intensity of the color change by diluting the activator solution with distilled water (Step 1). Don't dilute the catalyst solution—it has to go on full-strength (Step 2).

The surface doesn't need to be rinsed and the process doesn't raise the grain significantly. After the wood is dry, sand it lightly and apply clear topcoats. The color goes pretty deep, so stick with a film-forming finish that doesn't soak in

DARKENING BY CHEMICAL REACTION

Cost: \$22 for two 1-pt. bottles
\$1 for one gal. of distilled water
Coverage: 60 sq. ft.

PROS: Looks just like old cherry
Easy and safe
Makes sapwood the same color as heartwood

CONS: Highlights mottled figure
Extra steps
Finish topcoats necessary

or add much color of its own, such as shellac, lacquer or poly. **AW**

Sources See page 108



STEP 1 DILUTE THE ACTIVATOR SOLUTION with four parts distilled water, and brush it on the cherry. When the activator is used full strength, the catalyst solution turns cherry a very dark color.



STEP 2 BRUSH ON THE CATALYST SOLUTION, full strength, after the activator solution has dried. The cherry changes color immediately.

Craftsman-Style Outdoor Chair

By Randy Johnson

Jigs and fixtures make building this chair a breeze—whether it's one or a whole yard full.

If you're looking for an outdoor chair that's comfortable and stable, and yet light enough to move around, you'll appreciate this Craftsman-style beauty. It's based on a chair design published in the early 1900s in a Stickley design magazine called, *The Craftsman* (Fig. A). Originally, I built an exact replica of this chair, but discovered it was too large for the average person and the sling seat was so low and deep that everyone who sat in it responded with "whoa!" and then struggled to get out.

So, I made four additional chairs, changing various parts in an attempt to improve comfort and looks. In the end, I came up with a chair that is smaller and has a stretched-fabric seat. I also added some curves for a softer

look. One thing I kept from the original design is the mortise-and-tenon joinery. And for good reason—it's strong.

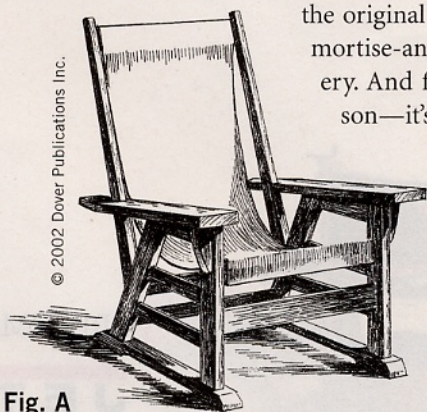


Fig. A
The original Craftsman chair design, circa early 1900s.

Tools and Materials

The essential power tools you'll need to build this chair are a tablesaw, a planer, a jointer, a bandsaw, a router and router table, a belt sander and a drill. A mortising machine is not a requirement, but it's really handy for the 24 mortises that each chair requires. You'll also need a variety of hand tools and a sewing machine, if you sew the fabric seat yourself.

It takes about 20 bd. ft. of lumber to build one chair. If you use mahogany (as we did), the wood will cost you about \$100. A less-expensive option is to use a construction lumber, such as pine 2x4s and 2x6s. Twenty bd. ft. of pine will cost about \$15. If you use construction-grade pine, let it dry for a couple of weeks indoors before using it. If you don't, your parts are likely to warp and twist. The 2-1/3 yards of fabric for the chair seat will run you about \$25. You will also need some galvanized screws and weather-resistant glue (see Sources, page 108).

Make One or Make a Dozen

Because this project lends itself to being mass-produced, we show you how to use jigs and fixtures to produce multiples. However, if you only want to make one or two of these chairs, you can skip one or all of the jigs and fixtures. If you do skip the jigs and fixtures, you'll have to be very careful about measuring and cutting, because without them it's easier to make a mistake.

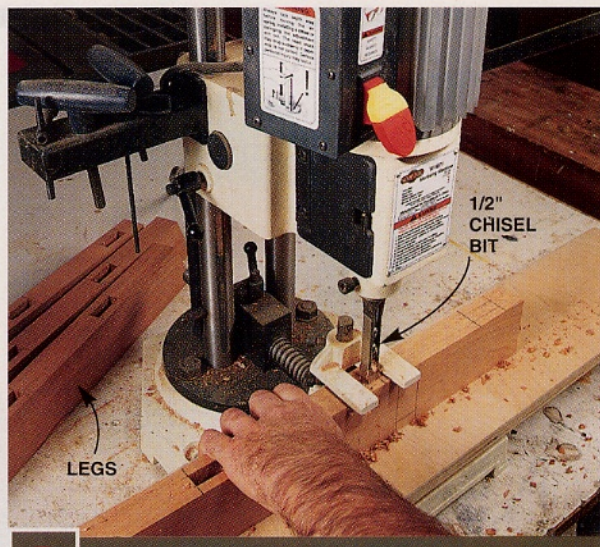




Craftsman-Style Outdoor Chair



1 Mark the mortise locations on the legs. Pairing up the legs improves the accuracy of the layout. Mortise-and-tenon joinery is a good choice for this outdoor chair because it provides strength and durability.

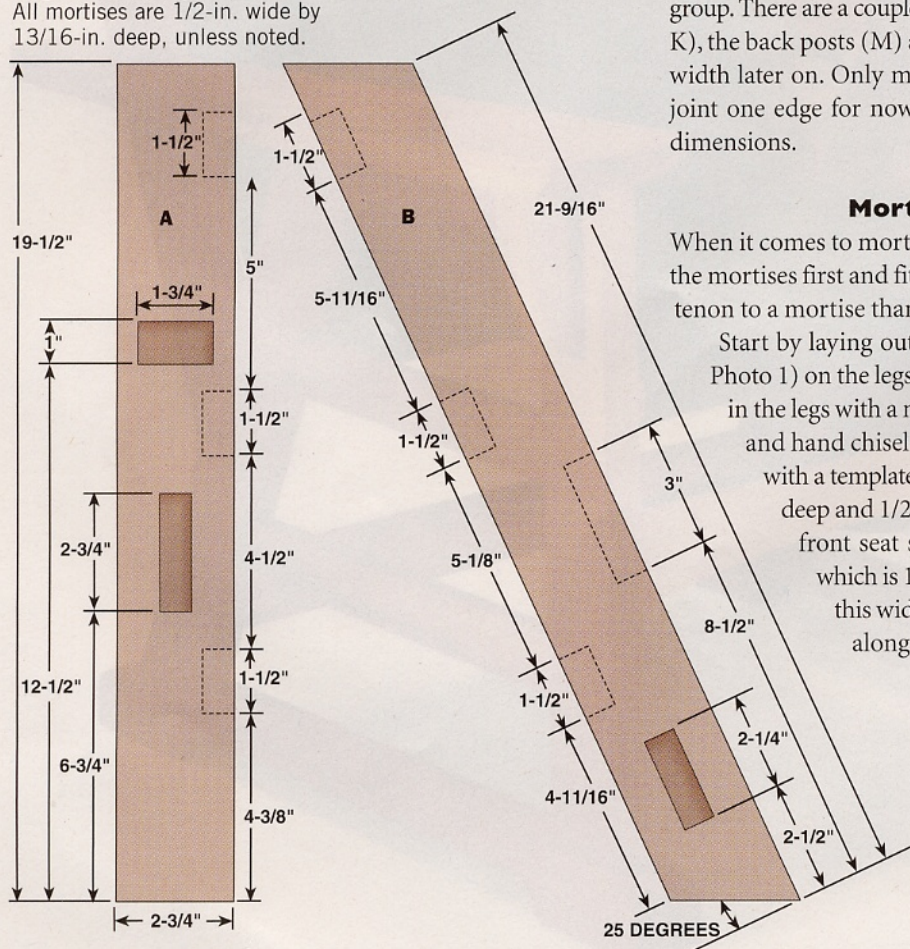


2 Cut the mortises. With 24 to cut, use a machine if you can, it's much faster! All the mortises in this chair are 13/16-in. deep.

Detail 1

Leg Mortise Layout

All mortises are 1/2-in. wide by 13/16-in. deep, unless noted.



Getting Started

It saves a lot of time if you cut all the parts to rough dimensions and machine them to final thickness and width as a group. There are a couple of exceptions to this. The feet (J and K), the back posts (M) and the armrests (N) get cut to final width later on. Only machine them to final thickness and joint one edge for now. See the Cutting List, page 72, for dimensions.

Mortising the Legs

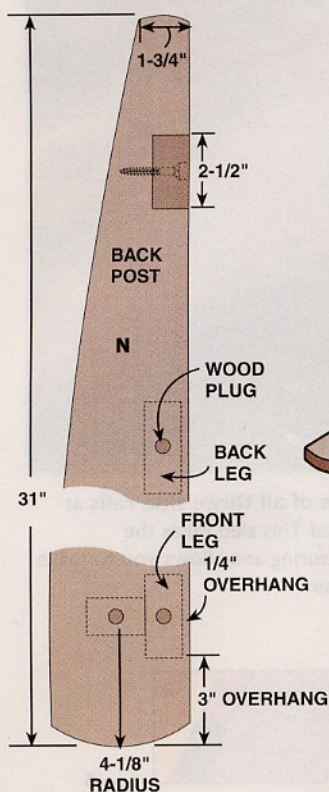
When it comes to mortise-and-tenon joinery, always make the mortises first and fit the tenons second. It's easier to fit a tenon to a mortise than the other way around.

Start by laying out the mortises (Detail 1, at left, and Photo 1) on the legs (A and B). Then make the mortises in the legs with a mortising machine (Photo 2) or drill and hand chisel the mortises or use a plunge router with a template guide. All the mortises are 13/16-in. deep and 1/2-in. wide, except the mortises for the front seat stretcher (Part H, Detail 4, Fig. B), which is 1-in. wide. I find the easiest way to cut this wide mortise is with the help of a spacer along the fence (Photo 3).

Cutting the Rails and Stretchers

These angled rails and tenons can be pretty intimidating, but if you build the cut-off sled (Fig. D) and follow the cutting sequence (Fig. C) they're quite doable.

Detail 2
Armrest Profile



Detail 3
Back Post Profile

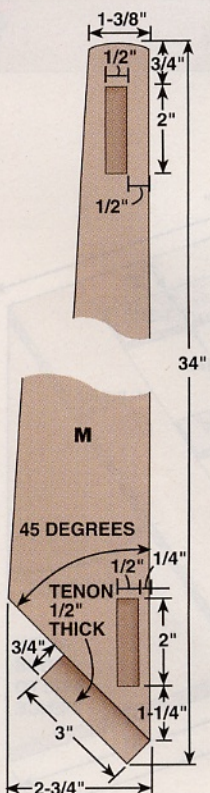
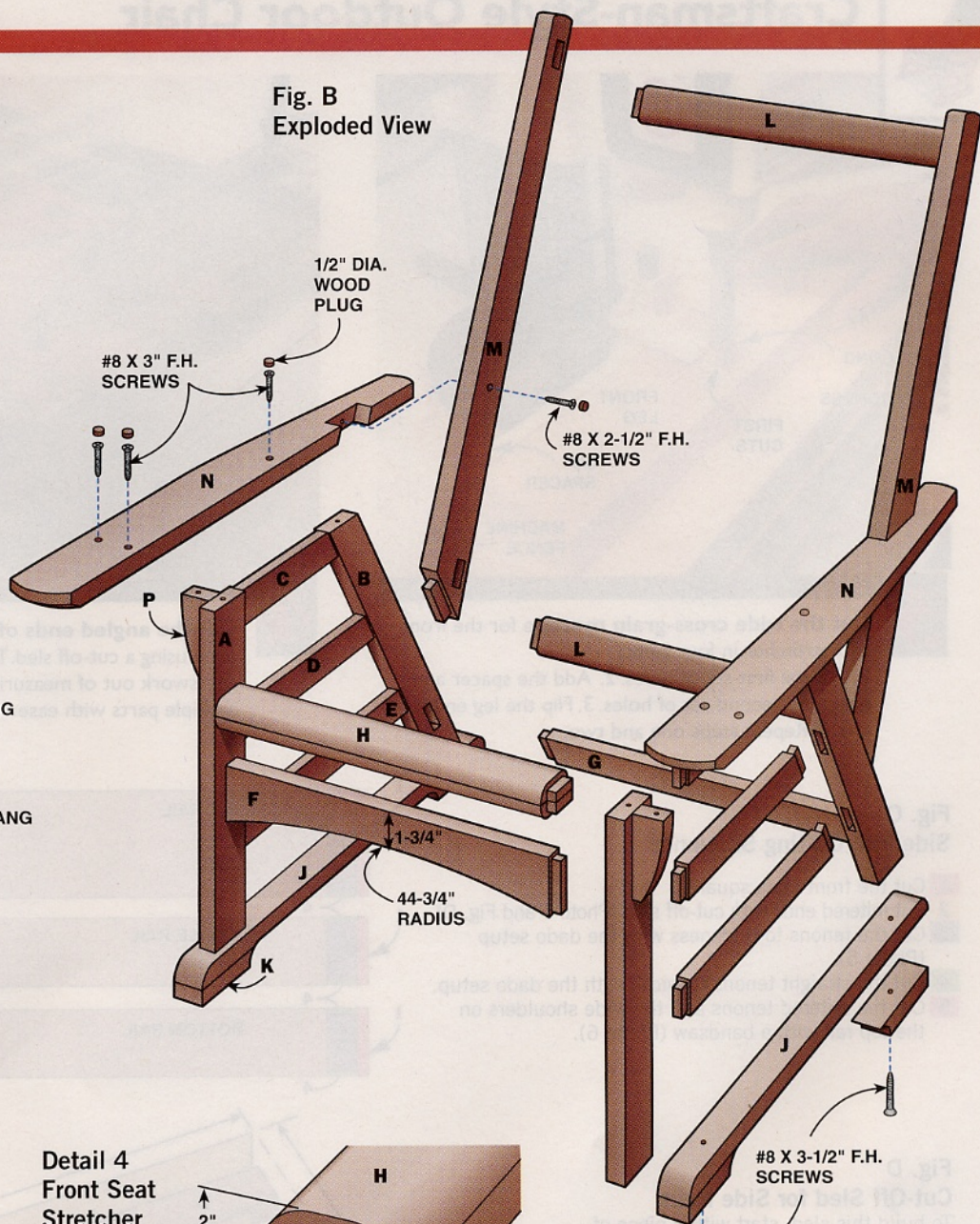
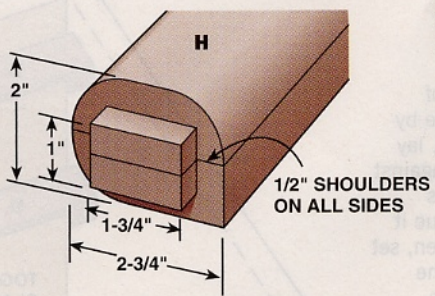


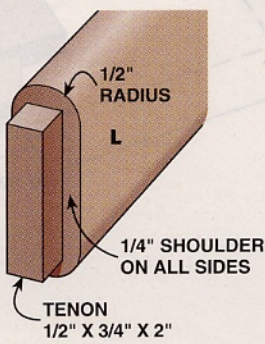
Fig. B
Exploded View



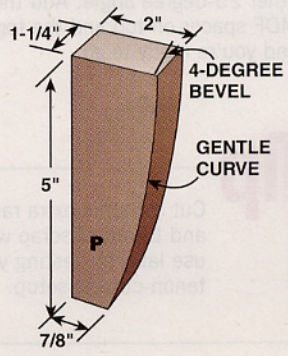
Detail 4
Front Seat Stretcher
Glue up from two 1-in.-thick boards.



Detail 5
Back Seat Stretcher

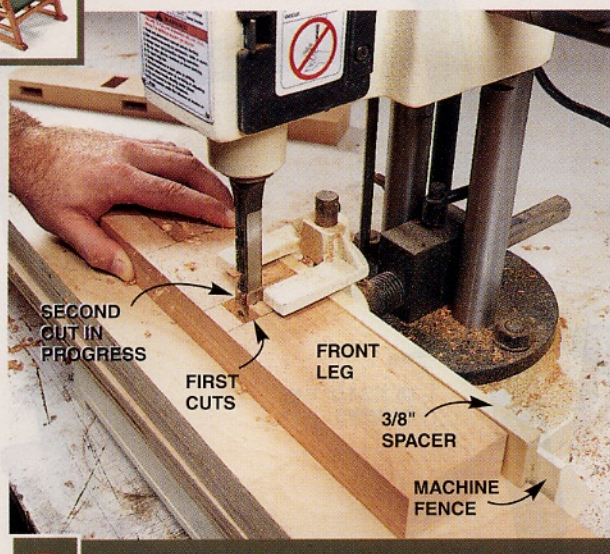


Detail 6
Armrest Bracket





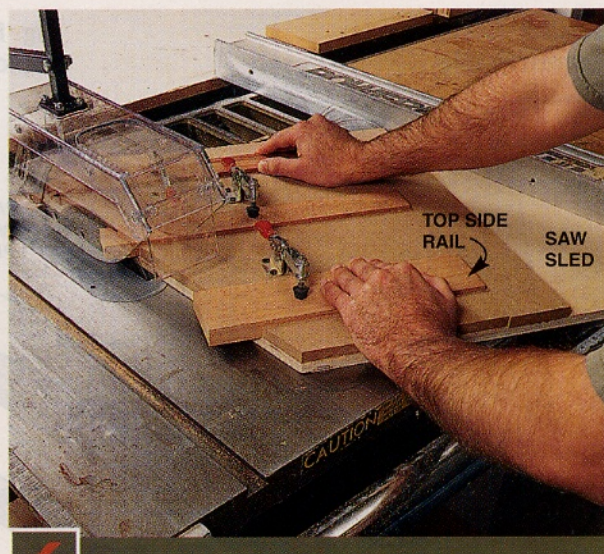
Craftsman-Style Outdoor Chair



3

Cut the wide cross-grain mortise for the front seat stretcher in four steps.

1. Cut the first set of holes. 2. Add the spacer and make the second set of holes. 3. Flip the leg end for end. 4. Repeat steps one and two.



4

Cut the angled ends of all three side rails at once using a cut-off sled.

This sled takes the guesswork out of measuring and allows you to make multiple parts with ease.

Fig. C
Side Rail Cutting Sequence

- 1** Cut the front ends square.
- 2** Cut mitered ends with cut-off sled (Photo 4 and Fig. D).
- 3** Cut the tenons to thickness with the dado setup (Photo 5).
- 4** Cut the straight tenons to width with the dado setup.
- 5** Cut the mitered tenons and the wide shoulders on the top rail with a bandsaw (Photo 6).

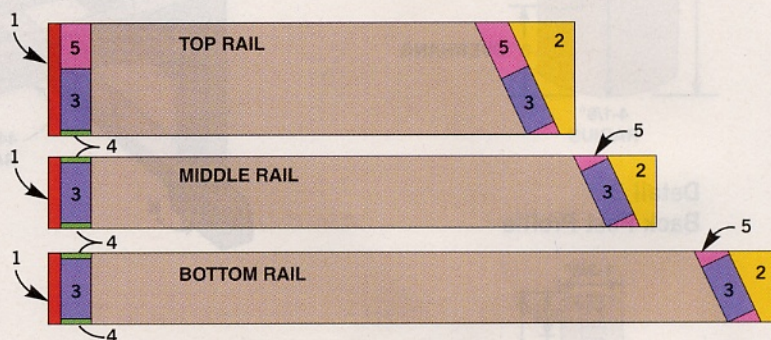
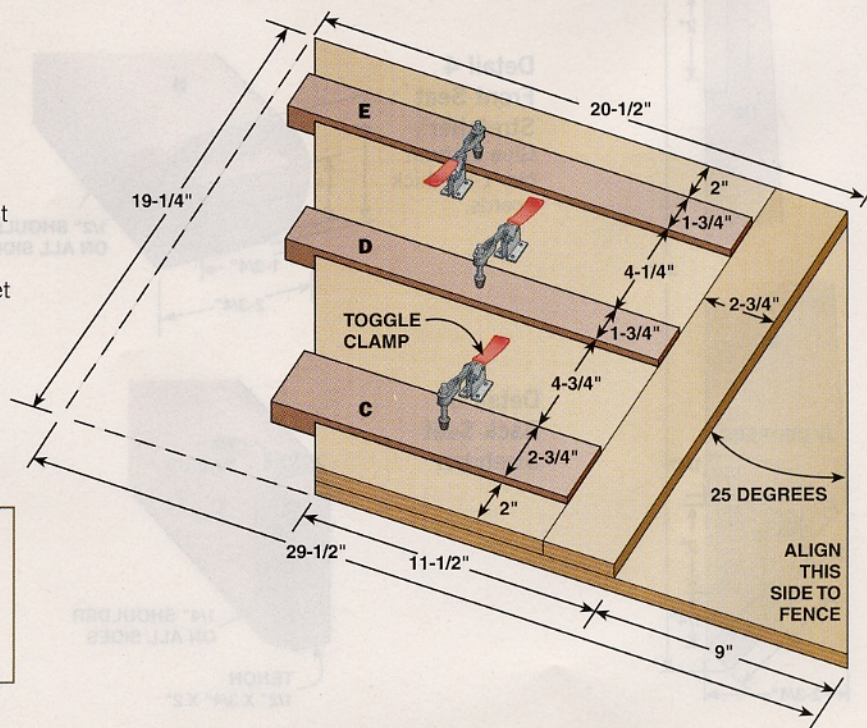


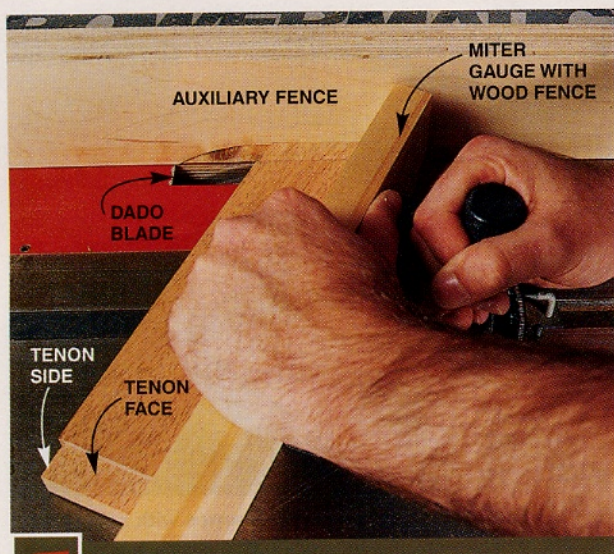
Fig. D
Cut-Off Sled for Side Rails

To build this sled, start with a piece of 3/4-in. plywood cut to 19-1/4-in. wide by 30-in. long. On this piece of plywood, lay out the 25-degree angle that will go against the tablesaw rip fence. Rough cut this angle with your bandsaw or jigsaw. True it up with a router and straightedge. Then, set your tablesaw to 18-1/2 in. and cut the other 25-degree angle. Add the 1/2-in. MDF spacer on top and the toggle clamps and you're ready to go.

Tip

Cut a couple extra rails (C, D and E) out of scrap wood to use later for testing your tenon-cutting setup.





5

Cut the tenons on the rails and stretchers using a dado blade on your table saw. For the angled tenons, set your miter to match the angle and run the end of the tenon against the fence.

The blade guard must be removed for this cut. **Be careful.**

The main purpose of the cut-off sled (Photo 4) is to cut the side rails (C, D and E) to an accurate length so they will fit the legs without any gaps (see *Oops!*, page 67).

Now cut the front and back rails (F and G) and stretchers (H and L) to length. Also, cut the miter at the bottom end of the back posts (M) (Detail 3, Fig. B and Fig. F). This saves time later on because you only have to set up your dado blade once to cut all the tenons.

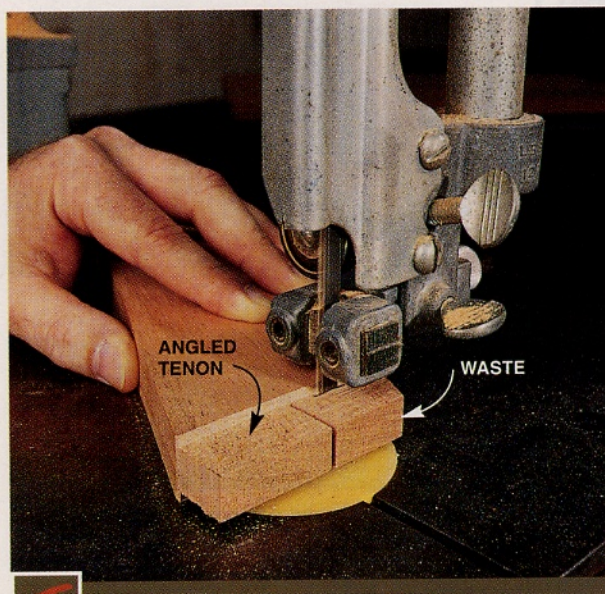
Cutting the Tenons

Everyone has their favorite way to cut tenons, and this is mine. (I also think it's the quickest and easiest way to cut *angled* tenons.)

Start by setting up your dado blade for a 13/16-in.-wide cut. Add an auxiliary wood fence to your table saw (Photo 5), and make fence adjustments for a perfect 3/4-in.-wide cut. All the tenons for this chair are 3/4-in. long.

Now set the dado blade for a 1/8-in.-deep cut. Cut a tenon on a test rail and check the fit. When the fit is right, cut all four sides of the straight tenons on the rails (C, D, E, F and G). For the angled tenons on the side rails (C, D and E), adjust your miter gauge to match the angle (Photo 5), and cut the tenon faces with this setup. Readjust the angle on your miter gauge and cut the other side of the angled tenons. Cut the shoulders on the angled tenons with your bandsaw (Photo 6) or with a handsaw.

Raise the dado blade to 1/4-in. for the back seat stretchers (L) and the angled tenons on the back posts (M). Raise it to 1/2-in. for the front seat stretcher (H).



6

Bandsaw the shoulders on the angled tenons. It takes a careful hand, but it's quick. A fine-tooth handsaw works as well.

Jigs and fixtures make the joinery precise.

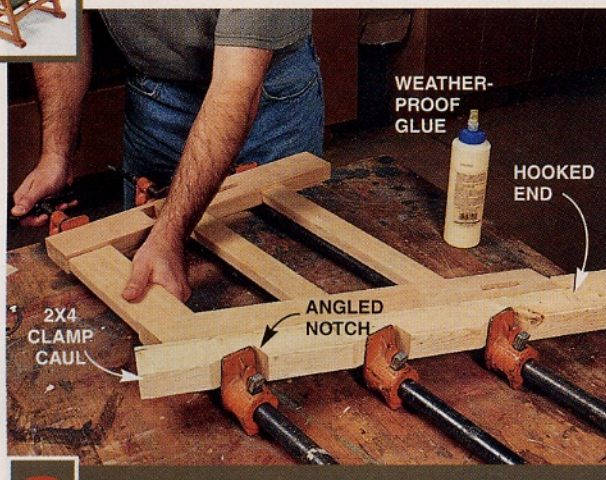


7

Round over three corners on the front seat stretcher with a 1-in. round-over bit in your router table. These large round-overs can also be made by hand planing. The fourth corner is left square. This provides a larger, flat surface to attach the fabric seat to later.



Craftsman-Style Outdoor Chair

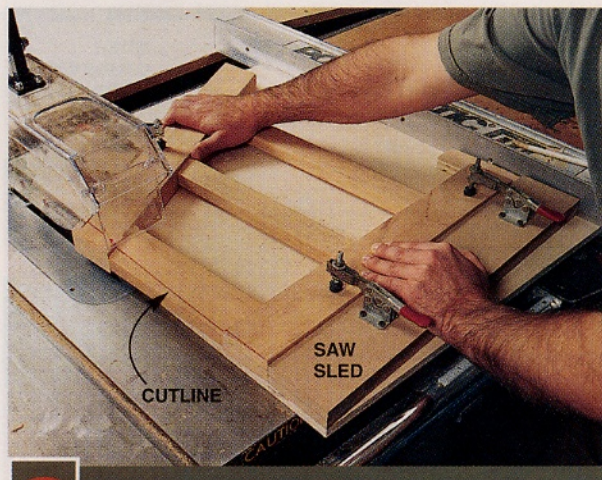


8

Clamp the leg frames using a notched clamping caul. The notches keep the clamping pressure in line with the rails and provide a flat surface for the clamp jaws to hold onto. The hooked end keeps the caul from sliding under pressure.

Tip

When assembling the leg frames, it works best to insert the angled tenons into the back leg first and then add the front leg.



9

Taper the top of the leg frames with a saw sled. If you are only making one or two chairs, you can forgo this sled and just use a bandsaw and belt sander.

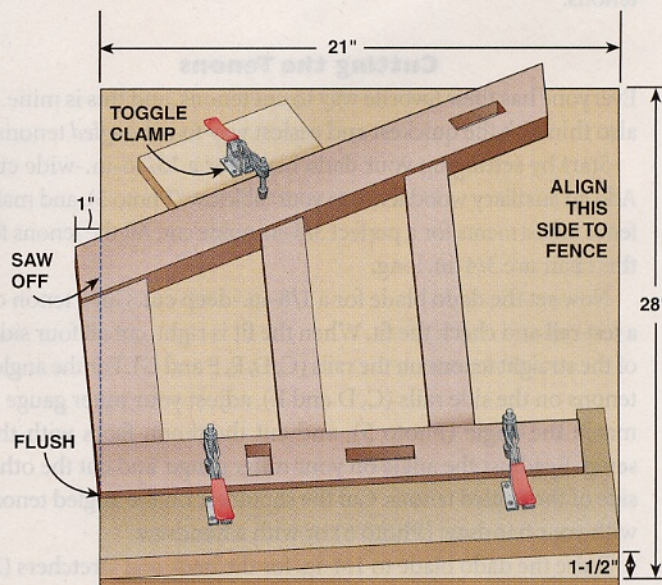
The secret to clamping angled assemblies, like the chair sides, is to keep the clamping pressure at a right angle to the joint.



10

Glue and clamp the chair base. Assemble the base on a flat surface and make sure all the legs are touching the benchtop.

Fig. E
Cut-Off Sled for Leg Frames



Assembling the Base

I scratched my head a bit about the best way to clamp the angled leg frames. I decided to make a notched clamping caul out of a 2x4 and it worked perfectly (Photo 8).

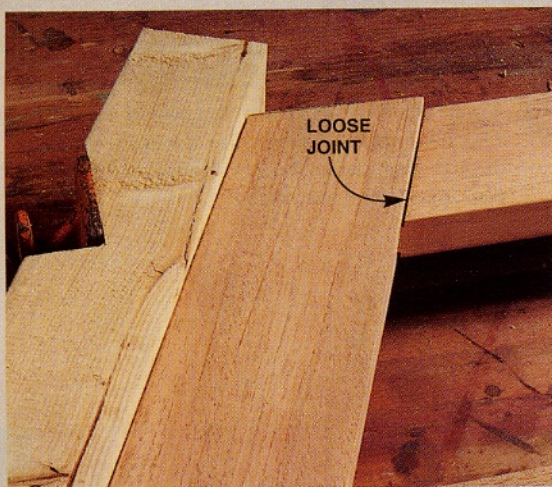
Be sure to test-fit and sand all the parts before final gluing. While you're waiting for the glue to dry, rout the large round-overs on the front seat stretcher with a 1-in. round-over router bit (Part H, Photo 7; see Sources, page 108).

Next, round both sides of the back seat stretchers (Parts L, Detail 5, Fig. B). A 1/2-in. round-over bit in your router table will do the job (see Sources, page 108). Bandsaw the

arch in the front rail (Part F, Fig. B) now.

The side leg frames need to be tapered at the top so the armrests will slope. A tablesaw sled makes this process quick and accurate (Fig. E and Photo 9). You can now assemble the entire chair base (Photo 10).

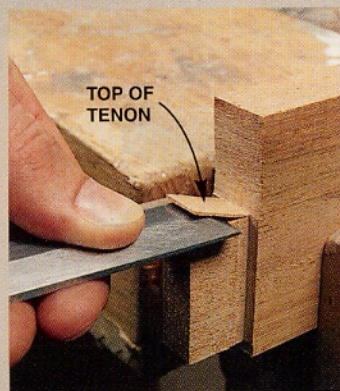
The foot assemblies are made by gluing the foot blocks (K) to the foot rails (J). After the glue is dry, joint and plane this assembly to final width and cut to final length. The curves can now be bandsawn and sanded. Attach the foot assembly with a single screw at each leg (Photo 11).



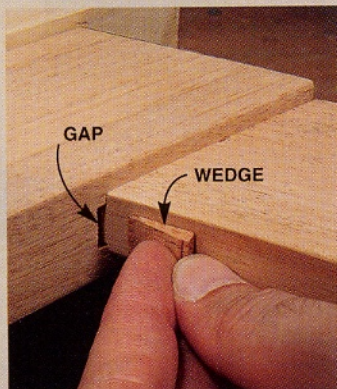
Dry-fit the leg frames to check for any loose joints.

Oops!

When building the prototype for this chair, I didn't use the crosscut sled to cut the angled rails. I cut the rails one at a time instead. My measuring wasn't as accurate as I thought! I ended up with a gap at one of the joints (photo at left). I managed a slick fix by trimming off the top of the tenons on that rail (photo below, left and illustration below). This opened up a small gap (photo below) on the lower side of the tenon, but this was easily filled by gluing in a small wedge of wood.

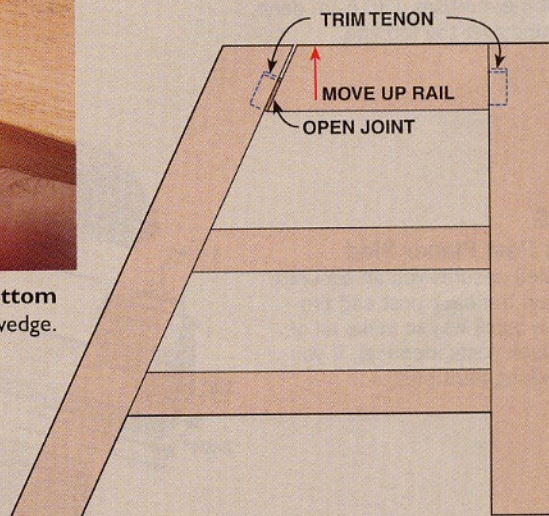


Chisel or bandsaw a small amount off the top of both tenons on the loose rails.



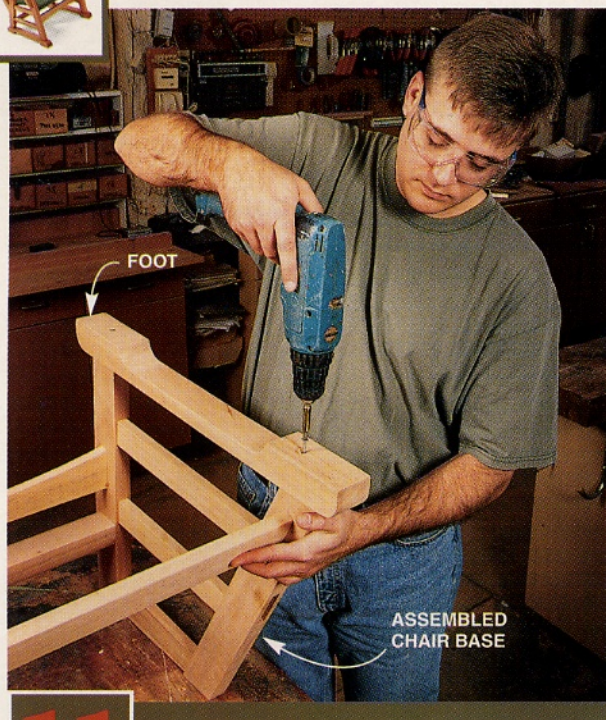
Fill in any gap at the bottom of the tenon with a small wedge.

If an angled joint has a gap, trim the top side of both tenons so you can slide the rail up until the joint is tight.





Craftsman-Style Outdoor Chair



11

Attach the foot assembly with one screw at each leg. Drill pilot holes in the feet and legs to lessen the chance of anything cracking. I don't use glue here so the foot assemblies can easily be replaced if they become worn or suffer decay.

Fig. F

Back Post Cutting Sequence

- 1 Cut the miter at 45 degrees.
- 2 Cut the tenon to thickness with the dado setup (Photo 5).
- 3 Cut the tenon to width with a bandsaw (Photo 6).
- 4 Cut the back post to final length.
- 5 Rough-cut the taper with a bandsaw.
- 6 Plane the taper with the planer sled (Photo 12, Fig. G).
- 7 Cut the mortises 13/16-in. deep.
- 8 Round over the top end.

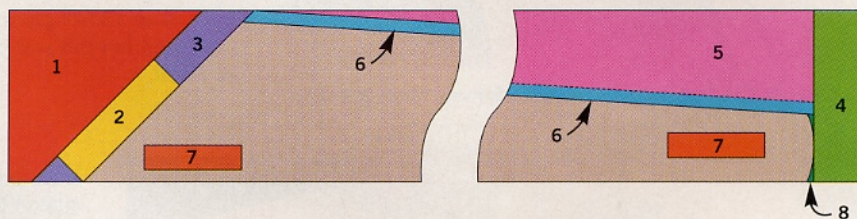
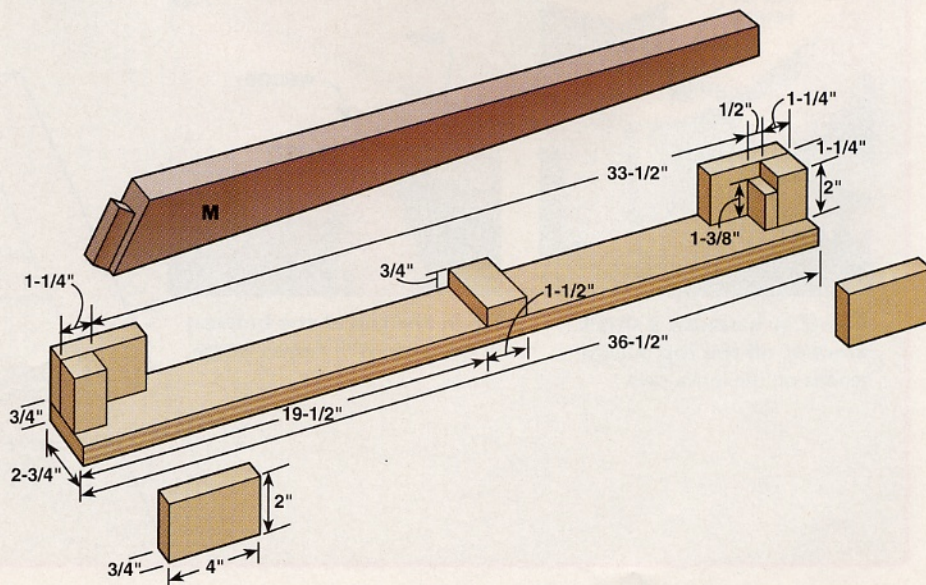


Fig. G

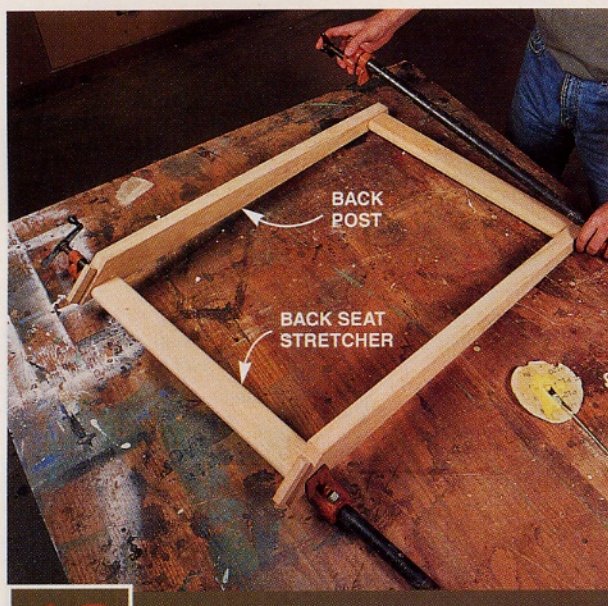
Back Post Planer Sled

This sled ensures you an accurate taper on the back post and provides a quick way to make all of your back posts identical, if you are making multiples.



12

Taper the back post with the help of a planer sled. Wax the bottom of the sled so it feeds smoothly through your planer. You can also make this taper with your jointer or a hand plane.



13

Assemble the back frame with glue and clamps. Check for square by measuring corner to corner.

Adding the Back

Complete the back posts (Parts M, Detail 3, Fig. B) by following the cutting sequence in Fig. F. The planer sled (Photo 12, Fig. G) takes the guesswork out of getting an accurate angle.

When you're done making the back posts, glue and clamp the back frame together (Photo 13). Clamp the back frame to the base with the help of a couple of angled clamping blocks (Fig. H) and a 2x4 clamping block (Photo 14). The real secret to clamping angles is to keep the clamping pressure at a right angle to the joint.

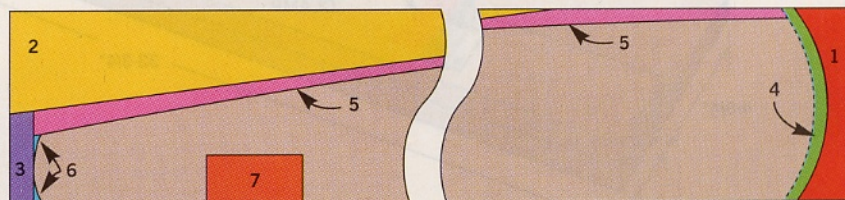
Fitting the Armrests

To make the armrests, follow the cutting sequence in Fig. J and fit them to the back posts (Photos 16 and 17). Counterbore for the wood plugs and drill pilot holes for the screws (Fig. B). Attach the armrests with glue and screws (Photo 18).

Fig. J

Armrest Cutting Sequence

- 1 Bandsaw and sand the front curve.
- 2 Rough-cut the side curve with a bandsaw.
- 3 Trim the armrest to final length.
- 4 Rout the chamfer on the front edge.
- 5 Rout the final side curve with the router template (Photo 15, Fig. K).
- 6 Sand the back end round.
- 7 Cut the notches for the back posts (Photos 16 and 17).



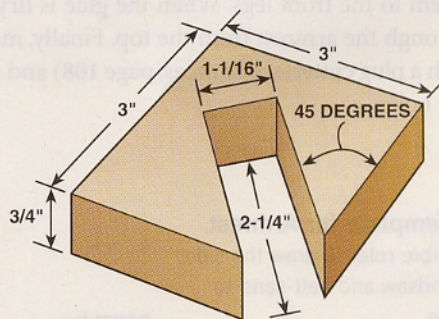
14

Attach the back frame to the base with the help of angled clamping blocks and a 2x4. This arrangement puts pressure at a right angle to the joint and keeps everything tight until the glue dries.

Fig. H

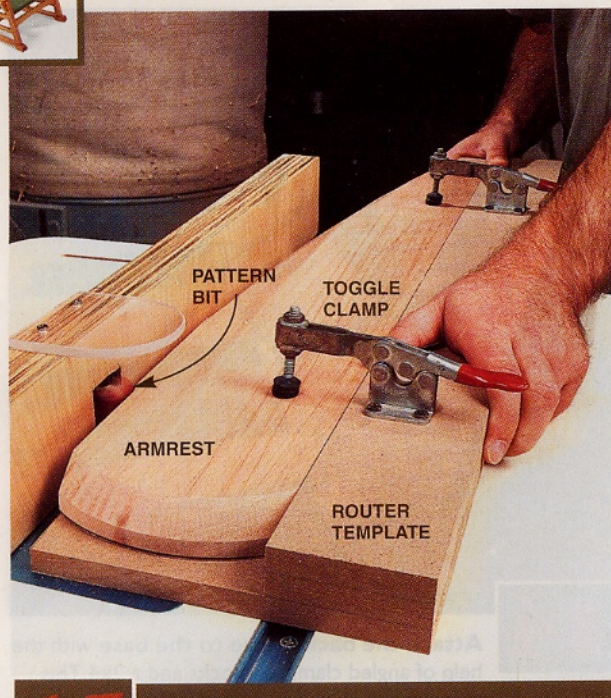
Angled Clamping Block

This block makes it possible to easily clamp the angled back frame to the chair base.





Craftsman-Style Outdoor Chair



15

Rout the side profile on the armrest with the router template and a large pattern bit. A belt sander can do the job if you are only making one or two chairs.



16

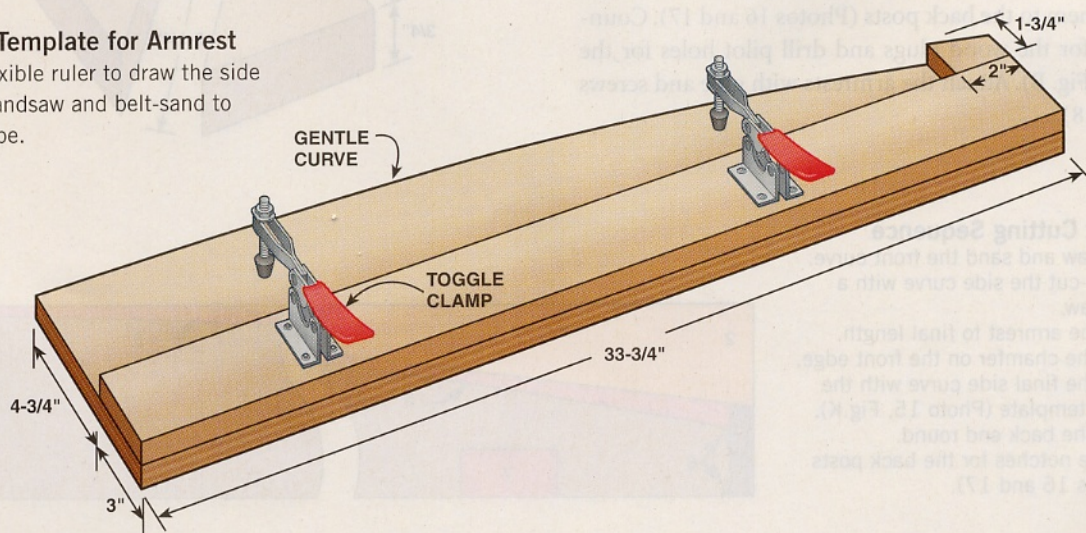
Mark the armrest for the notch that connects it to the back post. Be sure to mark this important joint carefully because it helps support the back post. You want the joint to fit snugly. To simplify this task, clamp a scrap of 2x4 to the side frame to support the armrest while marking the notch.

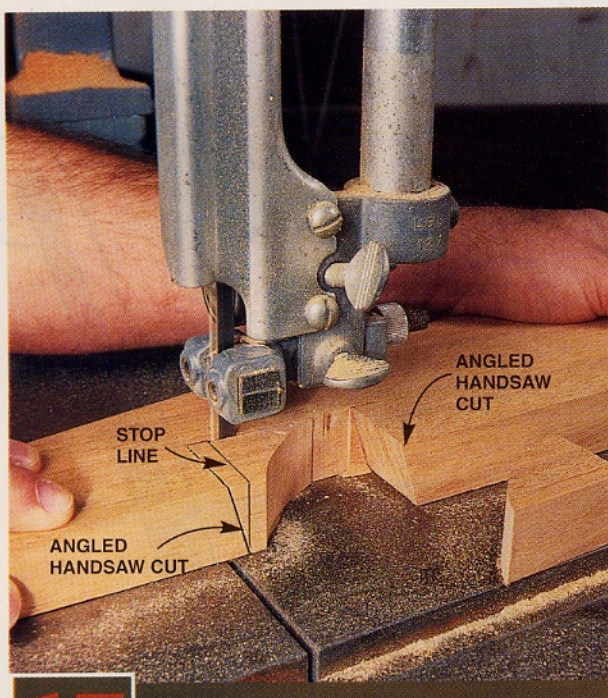
Make the armrest brackets (Detail 6, Fig. B) and glue and clamp them to the front legs. When the glue is dry, add a screw through the armrest from the top. Finally, make the plugs with a plug cutter (see Sources, page 108) and plug all the screw holes.

Finishing for Outside Use

If you want your mahogany chair to weather to a gray patina, leave it unfinished. If you want to maintain the look of new wood, apply a good-quality clear finish.

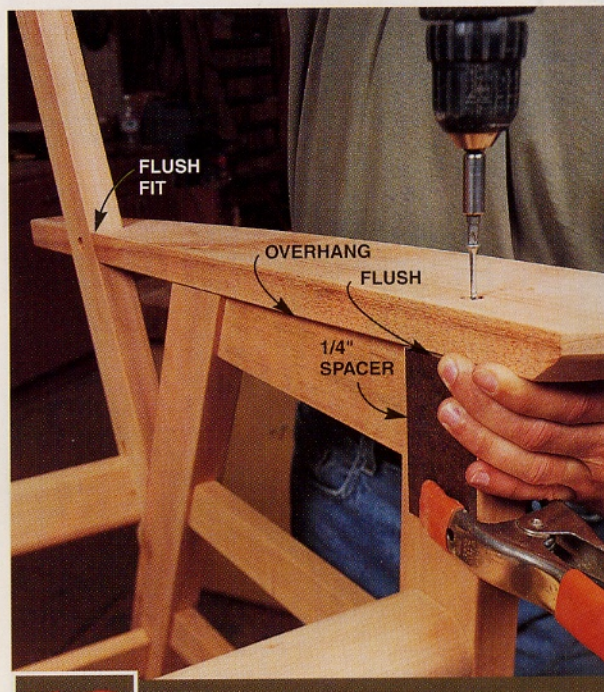
Fig. K
Router Template for Armrest
Use a flexible ruler to draw the side curve. Bandsaw and belt-sand to final shape.





17

Cutting the notch in the armrest requires angled and straight cuts. First make the angle cuts with a handsaw. Then mark a stop line so you don't over cut when bandsawing the rest of the notch. The waste remains attached by a small amount of wood, but it is easily snapped off. Clean up any roughness with a chisel.

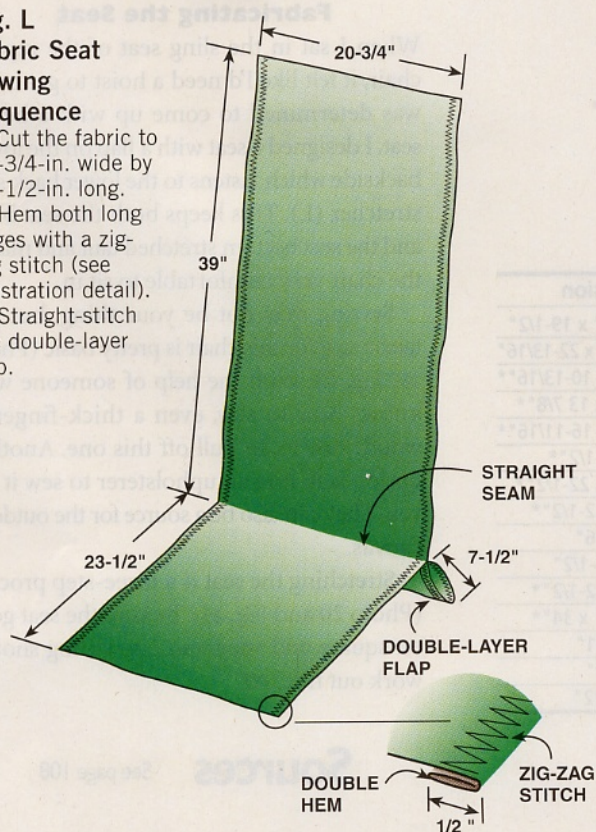


18

Attach the armrest. First screw it to the back post. Then twist the arm slightly to create a 1/4-in. overhang on the inside at the front leg. Counterbore for the wood plugs and drill pilot holes for the screws. Finally, glue and screw the armrest to the legs.

**Fig. L
Fabric Seat
Sewing
Sequence**

1. Cut the fabric to 22-3/4-in. wide by 77-1/2-in. long.
2. Hem both long edges with a zig-zag stitch (see illustration detail).
3. Straight-stitch the double-layer flap.



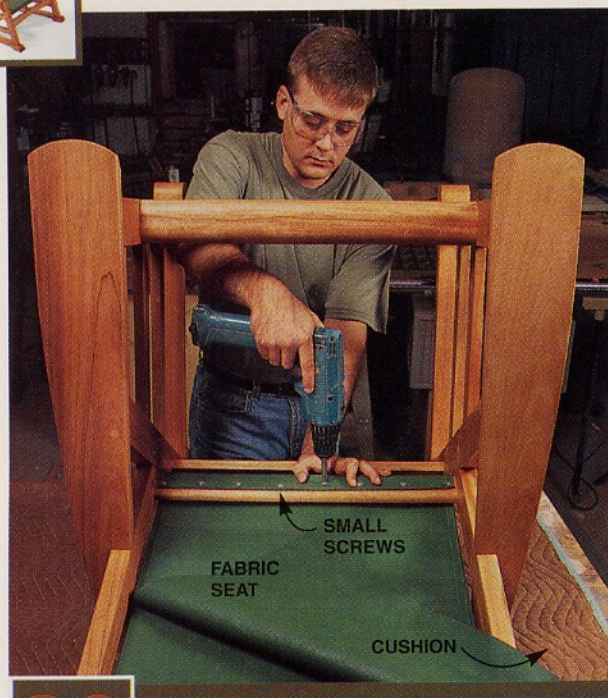
19

Sew the fabric seat. Do it yourself, bribe a relative or hire an upholsterer. Outdoor canvas is available in many colors and patterns (see Sources, page 108). It's made to withstand sun and rain, and is mildew resistant.

Sewing needles are really sharp so don't forget to wear your safety gear (just kidding!).



Craftsman-Style Outdoor Chair



20

Install the fabric seat with small screws. They're easy to remove if you need to retighten or replace the seat. Stretch the fabric taut when installing it.

A good outdoor chair should be comfortable, stable and light enough to move around.

CUTTING LIST

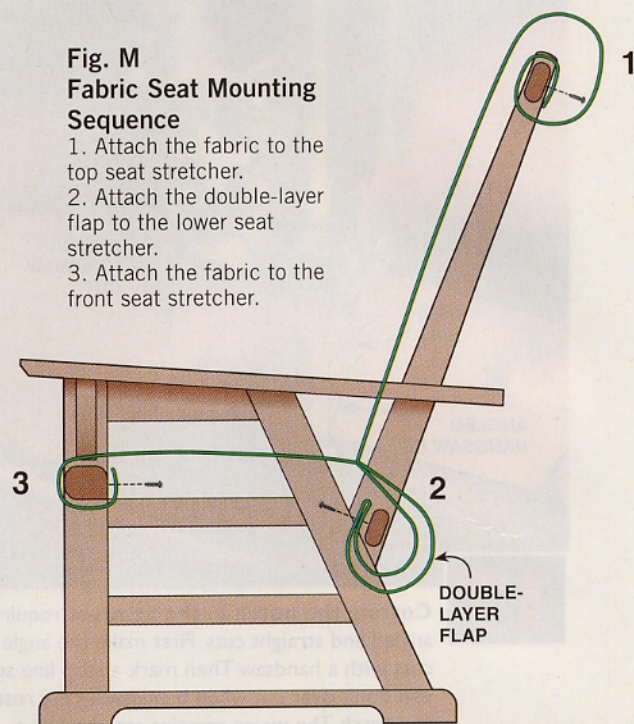
Overall Dimensions: 41-1/2"H x 30"W x 33-1/2"D

Part	Name	Qty.	Rough Dimension	Final Dimension
A	Front legs	2	1-1/2" x 3" x 21-1/2"	1-1/4" x 2-3/4" x 19-1/2"
B	Back legs	2	1-1/2" x 3" x 24"	1-1/4" x 2-3/4" x 22-13/16"
C	Top side rails	2	1" x 3" x 12"	3/4" x 2-3/4" x 10-13/16"
D	Middle side rails	2	1" x 2" x 15"	3/4" x 1-3/4" x 13 7/8"
E	Bottom side rails	2	1" x 2" x 18"	3/4" x 1-3/4" x 16-11/16"
F	Front arched rail	1	1" x 3-1/4" x 24"	3/4" x 3" x 22-1/2"
G	Rear leg rail	1	1" x 2-1/2" x 24"	3/4" x 2-1/2" x 22-1/2"
H	Front seat stretcher	1	2-1/2" x 3" x 24"	2" x 2-3/4" x 22-1/2"
J	Foot rails	2	1-1/4" x 2-1/2" x 27"	1" x 2-1/4" x 26"
K	Foot blocks	4	1-1/4" x 2-1/2" x 6-1/2"	1" x 2-1/4" x 5-1/2"
L	Back seat stretchers	2	1-1/4" x 2-3/4" x 24"	1" x 2-1/2" x 22-1/2"
M	Back posts	2	1-1/2" x 3" x 36"	1-1/4" x 2-3/4" x 34"
N	Armrests	2	1-1/4" x 5" x 32"	1" x 4-3/4" x 31"
P	Armrest brackets	2	1-1/2" x 2-1/4" x 6"	1-1/4" x 2" x 5"
Q	Fabric seat	1	22-3/4" x 77-1/2"	20-3/4" x 77-1/2"

* Includes tenons

Fig. M
Fabric Seat Mounting Sequence

1. Attach the fabric to the top seat stretcher.
2. Attach the double-layer flap to the lower seat stretcher.
3. Attach the fabric to the front seat stretcher.



Fabricating the Seat

When I sat in the sling seat of the replica chair, it felt like I'd need a hoist to get out. I was determined to come up with a better seat. I designed a seat with a flap on the lower backside which fastens to the lower back seat stretcher (L). This keeps both the seat back and the seat bottom stretched taut and makes the chair very comfortable to sit in.

Sewing may not be your thing, but the fabric seat for this chair is pretty basic (Photo 19, Fig. L). With the help of someone who knows how to sew, even a thick-fingered woodworker can pull off this one. Another option is to hire an upholsterer to sew it for you. They can also be a source for the outdoor canvas.

Stretching the seat is a three-step process (Photo 20 and Fig. M). Be sure the seat goes on square and snug and everything should work out fine. **AW**

Sources See page 108

HEAVY-DUTY FOLDING SHOP TABLE

By Tom Caspar

Need more bench space? Who doesn't? Here's a terrific solution: a folding worktable that's both big and strong. And we mean *strong*.

You can set it up in only a minute and be ready for routing, sanding, planing—you name it. When you're done, fold up the table into a super-compact unit only five-inches thick and stow it away. Here today, tucked away tomorrow.

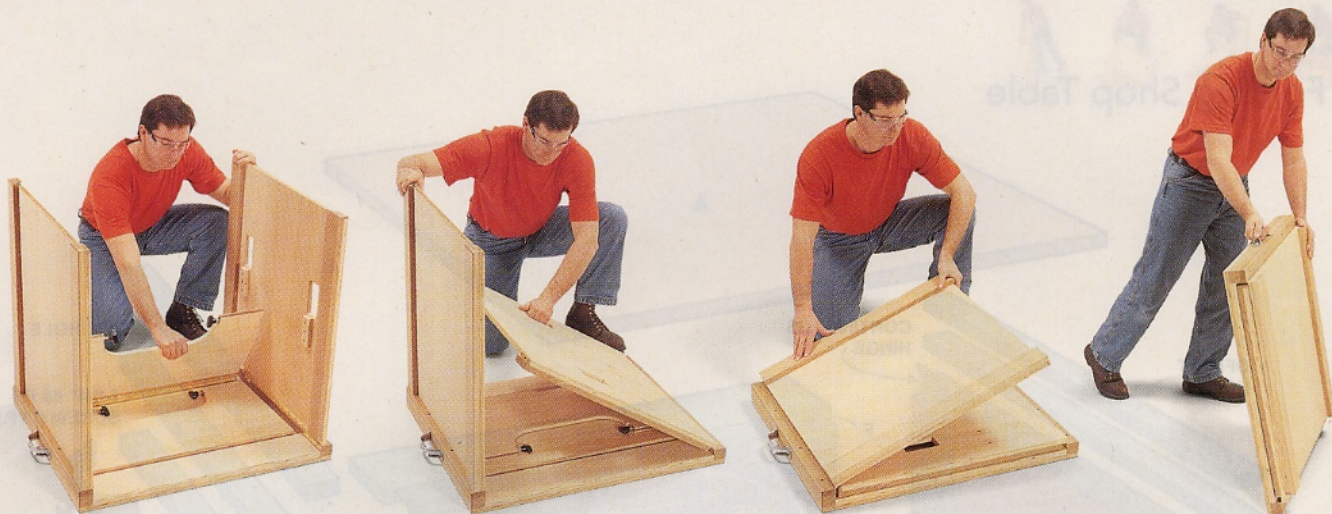
Strong = Heavy

This table weighs in at about 70 lbs., a bit more than the full sheet of plywood it's made from. A lighter table made of smaller plywood parts would be more portable, but not stiff enough to use as a real workbench (Photo 1). For heavy-duty use, extra weight is actually a plus. This table stays put!

The keys to this table's strength are its wide rails, rigid continuous hinges and hardwood legs. The oversize rails and long hinges prevent the table from racking. The solid-wood legs prevent the plywood end panels from bending or shaking.

Go ahead and shove this table around the shop. The hardwood legs can take the punishment. Folded up, it stands on a durable hardwood rail, so you can slide the table across the floor into a small cubbyhole (Photo 2).

1 This worktable is built for strength. It won't wobble, sag or walk across the floor. Weighing 70 pounds or so, it's not going anywhere until you stow it away.



Tools and Materials

This is a low-cost, easily built plywood project. Total cost is about \$75, half for the wood and half for the hardware. You can build it in a day, no sweat, using little more than a tablesaw, jigsaw, hacksaw and a drill. All you have to do is cut a few plywood pieces to size, rip and cut some narrow 3/4-in.-hardwood boards to length and accurately drive in a whole mess of hinge screws. To make setting the hinges a lot easier, we recommend using a self-centering bit (see Sources, page 108).

Build your table from one sheet of an inexpensive grade of birch plywood (about \$40). Fir plywood and MDF are even less expensive, but both are inferior substitutes. Fir plywood is usually quite twisted and MDF is way too heavy.

You'll need some 3/4-in. solid wood for mounting the hinges. Plywood won't do, because the hinge screws run into the edge of these boards. This would place the screws between the plies and chances are they wouldn't hold. Pine isn't a great choice, either, because it's too soft to hold small screws well. Go with a hardwood that's milled flat so you can glue its faces together. Birch or red oak are good choices.

Pick up most of the hardware at a hardware store or home center (see the Shopping List on page 79). It'll add up



2 This table is built like a rock but knocks down in only a minute. You don't need any tools and you don't have to keep track of any loose pieces. Simply unscrew four knobs, fold the rails and legs on top of each other and tuck the worktable away.

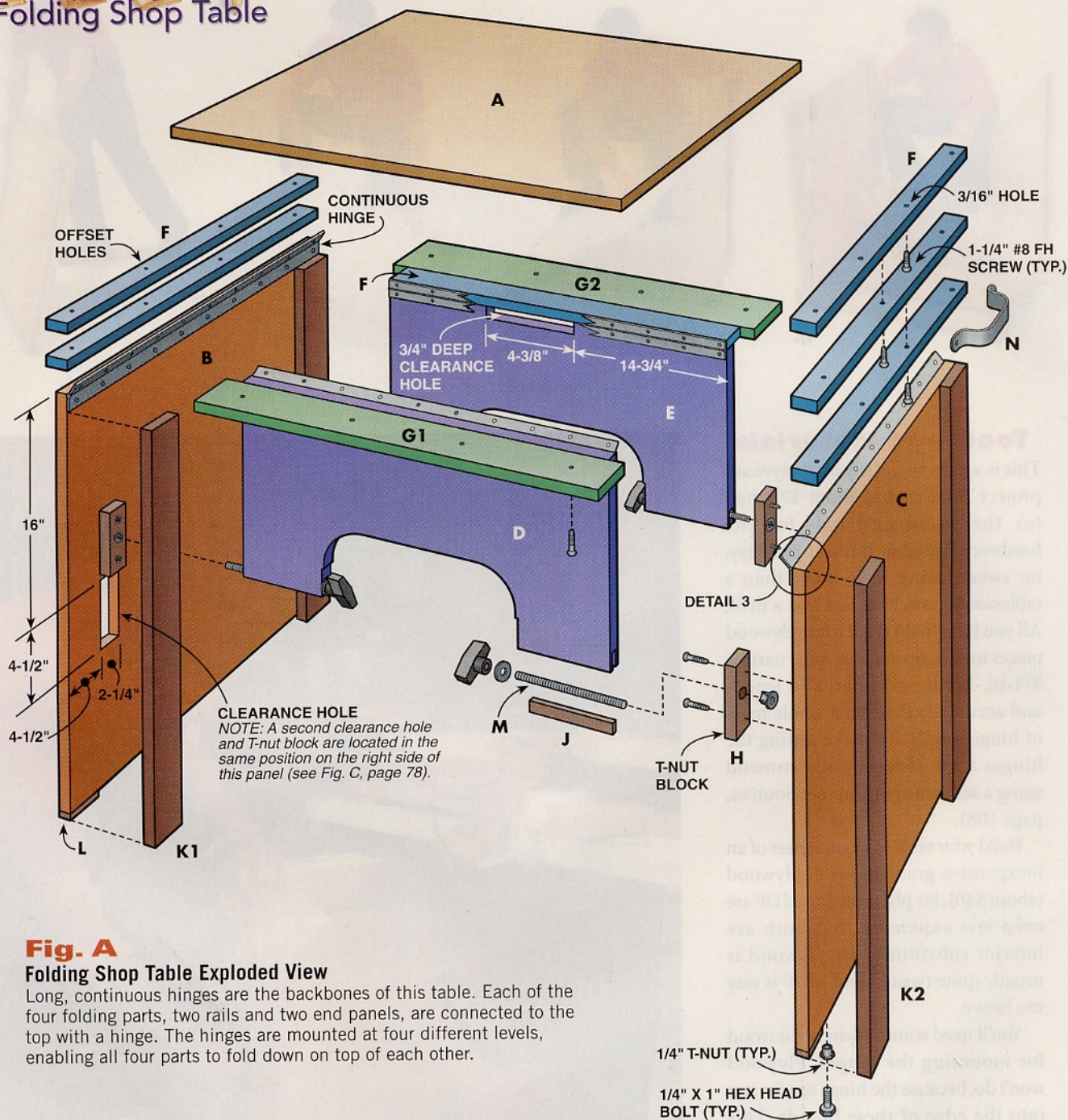


Fig. A
Folding Shop Table Exploded View

Long, continuous hinges are the backbones of this table. Each of the four folding parts, two rails and two end panels, are connected to the top with a hinge. The hinges are mounted at four different levels, enabling all four parts to fold down on top of each other.

to about \$35. A good chunk of that is for the continuous hinges, but they're worth it. Standard butt hinges allow too much play and the table would wobble.

The only hard-to-find items are the large knobs on the rails. We used T-style knobs because they offer a lot of leverage and have a low profile (about \$2 each, see Sources, page 108). (Round

knobs won't allow the table to fold completely flat.)

Making the Plywood Parts

Begin by cutting up the entire sheet of plywood (see Fig. B, page 77). Note in the Cutting List, page 79, that End Panels B and C differ in length by 3/4-

in. because they fold underneath stacked blocks of different thicknesses.

Rails D and E require a bit more tablesaw work. Cut grooves in both rails for the threaded rod (Photo 3, page 78). You can use a dado set or make multiple cuts with a standard blade. Then create a flat surface for the T-style knobs to bear against (Detail 1, page 77)

with a crosscut on the tablesaw. Attach a tall backer board to your miter gauge and stand the rails on edge to make these cuts perfectly straight and square. Cut the arches in the rails with a jigsaw.

Keep the jigsaw handy. Cut three clearance holes, one in the edge of Rail E and two in End Panel B (Fig. A). The holes allow all the parts of this table to fold flat.

Making the Locking Bolts

Four stout bolts with T-handles lock this table together. Cut the bolts to length from threaded rod. Sitting in the groove, with the handle attached, the bolts must stick out about 5/8-in. beyond the end of the rail (Detail 1, at right).

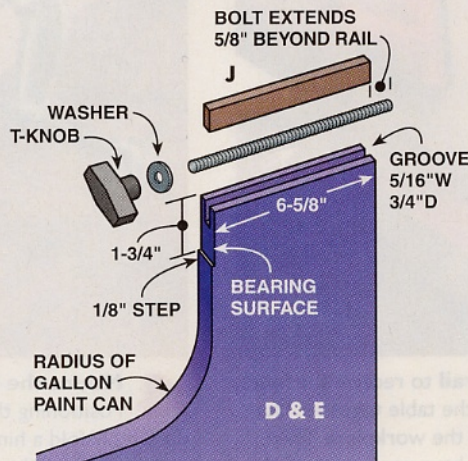
Glue a T-handle onto each threaded rod with epoxy or a special permanent glue made for nuts and bolts, such as Loctite or Thread Locker (available at hardware and auto stores for about \$2.50 a tube). Heavily round the other end of the bolt with a file or grinder so it easily engages the T-nut.

Place the bolts and washers in the rail's grooves. The bolts are held in place by small strips of hardwood cut to fit the groove (Fillers J, Detail 1, above right). Glue in the fillers. With a clamp or two, squeeze down on the fillers so they bite into the screw's threads a bit. When the glue is dry, the bolts shouldn't slide freely (or they'll fall out when you fold up the table!). Dab a little grease onto the bolts to make them turn easier.

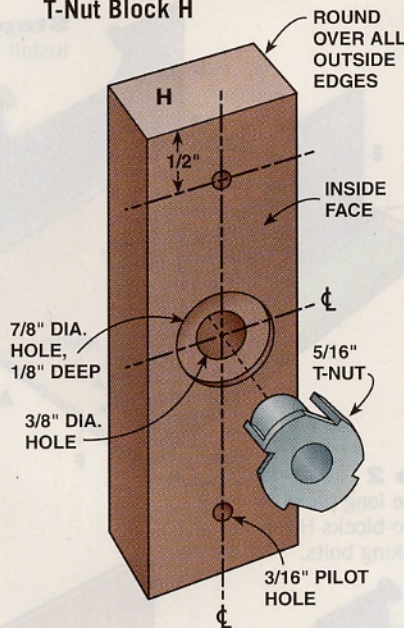
Cut and drill four plywood blocks to receive T-nuts (Parts H, Detail 2, at right). Pound in the T-nuts and clear the deck for assembling the table. All the parts are now cut to size and ready to go.

Attach three of the hinges to three of the six hardwood Riser Blocks F (Photo 4, page 78 and Detail 3, above right). Attach a hinge to Rail D as well (Detail 4, above right). Toss the screws that come with the continuous hinges. They're too short and fragile. Use the larger screws included in the Shopping List, page 79. Don't bother to countersink deeper holes in the hinges for these screws. The heads don't show, so it's not worth the trouble.

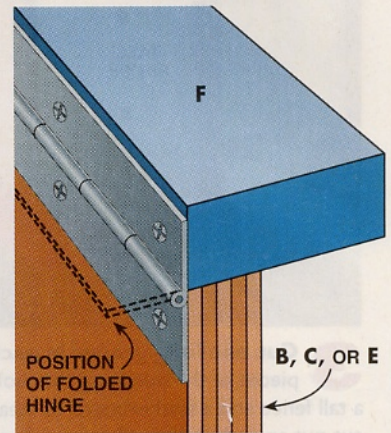
Detail 1 End of Rails D and E



Detail 2 T-Nut Block H



Detail 3 Location of Hinge on Rail E and End Panels B and C



Detail 4 Location of Hinge on Rail D

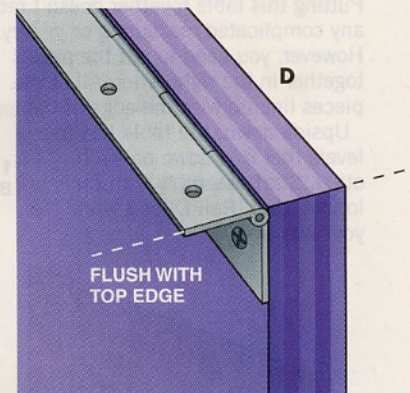
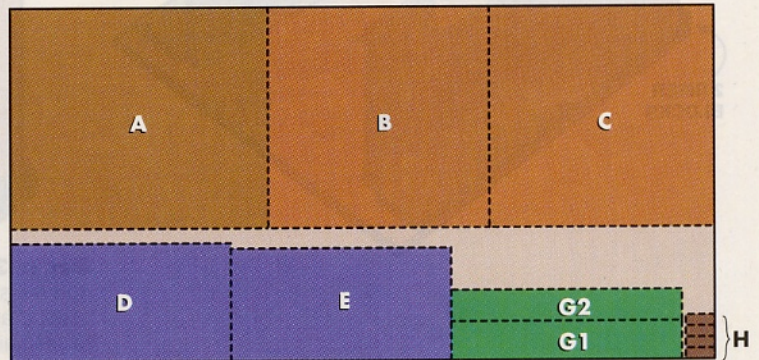


Fig. B Plywood Cutting Diagram

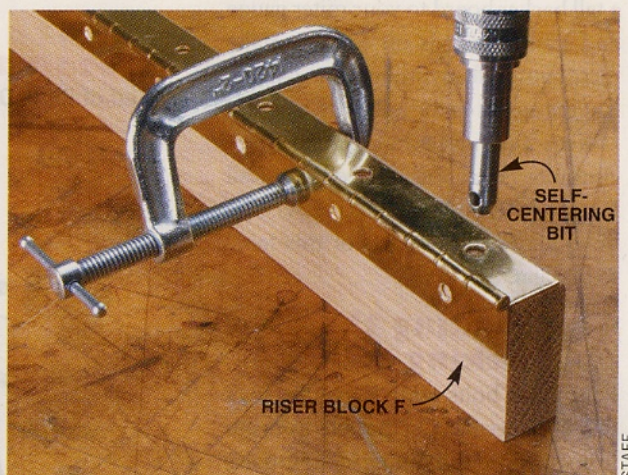
We've maxed out one sheet of birch plywood to make this shop table as large as possible. Making the largest pieces (A, B and C) requires only three cuts. Rip the full sheet first, then crosscut twice to exact length.



Folding Shop Table



3 Cut one long groove in each rail to receive the four pieces of threaded rod that hold the table together. Use a tall fence and a featherboard to steady the workpiece. Then, cut out an arch in the rail so your hands have room to turn the knobs on the threaded rods.

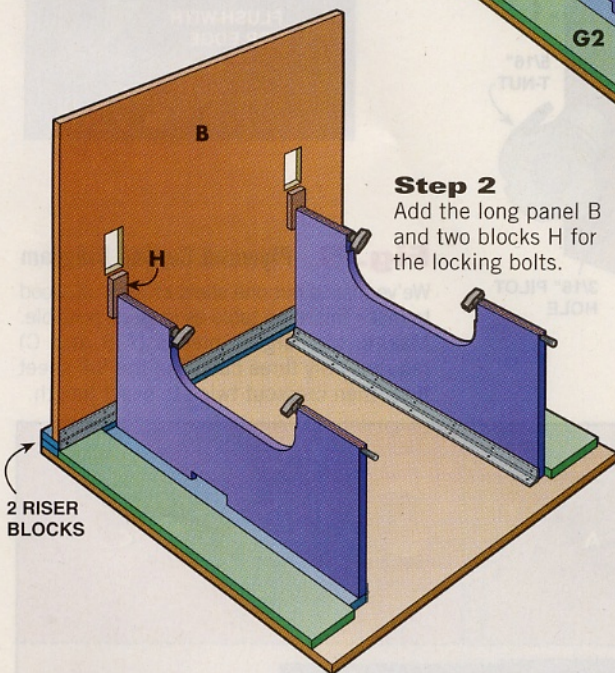


4 Mount the hinges before assembling the table. Positioning the hinges is critically important, but easy to do. Simply fold a hinge over one of the hardwood riser blocks and clamp it in place. Drill pilot holes with a self-centering bit. Drive in the screws, unfold the hinge and you're good to go.

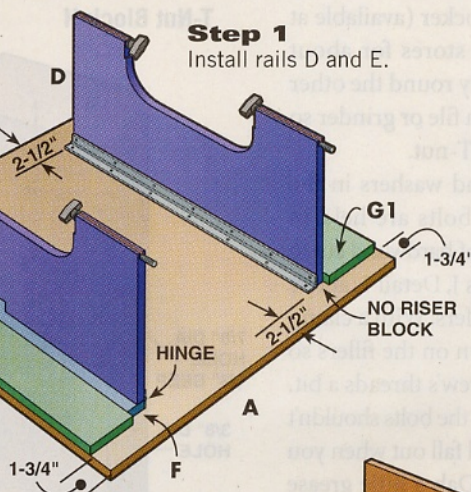
Fig. C Three Assembly Steps

Putting this table together doesn't require any complicated measuring or joinery. However, you need to put the pieces together in the right order. All of the pieces line up with the edge of the top.

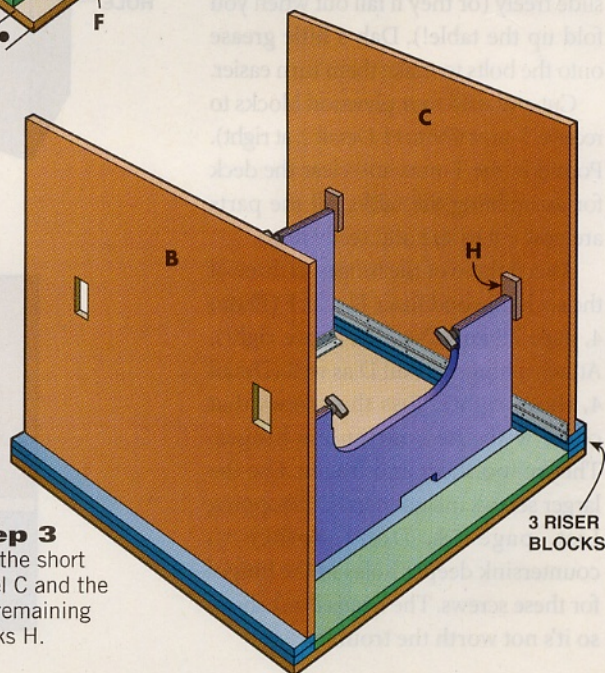
Upside down, the table has four levels that fold down on each other. Start assembly with the lowest level (Rail D) and work your way up.



Step 2
Add the long panel B and two blocks H for the locking bolts.



Step 1
Install rails D and E.



Step 3
Add the short panel C and the two remaining blocks H.

Assembly

Put the table together in three stages (Fig. C), upside down, level by level. Test the parts as you go to make sure they fold flat.

Screws alone do a surprisingly good job of aligning the parts and holding this table together. Glue the parts to make the table even stronger.

Step 1. Attach Spacer G1 to the underside of Top A. Butt Rail D to the spacer and screw the hinge to Top A.

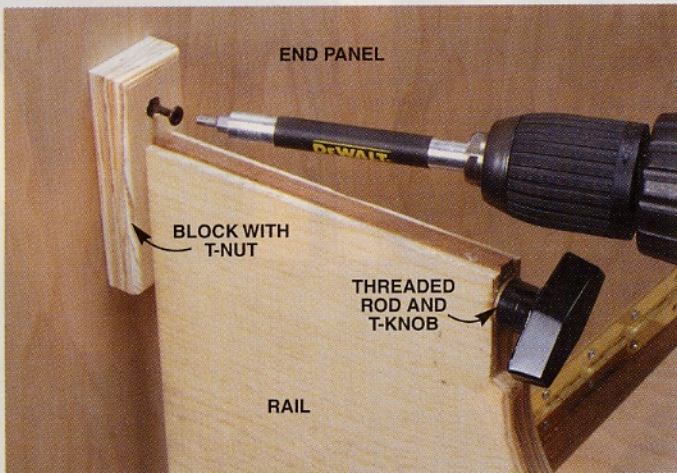
Screw Spacer G2 to the top. Butt one Riser Block F with an attached hinge to the spacer and screw the riser block to the top. Clamp Rail E to the hinge and screw the hinge to the rail.

Step 2. Attach a Riser Block F (with no hinge attached) flush with the left side of the table. Screw another Riser Block F (with a hinge attached) on top of it. Attach End Panel B to the hinge.

Thread two T-Nut Blocks H onto the bolts in Rail D and Rail E. Be sure the T-nut faces out (Fig. A, page 76). Screw the T-nut blocks onto the end panel (Photo 5).

Step 3. Attach the remaining two Riser Blocks F (without hinges) flush with the right side of the table. Stack the third riser block (with a hinge attached) on top. Attach End Panel C to the hinge. Attach the T-nut blocks the same as before. Glue on the Legs K1 and K2. (Note that they go on the inside of Panel B and the outside of Panel C; see Fig. A page 76.) Glue on the Feet L and attach the handle.

Once the table is assembled, round over all the edges with sandpaper, a file, or better yet, a 3/16-in. round-over bit in a router. To keep the table from rocking on an uneven floor, insert 1/4-in. T-nuts and bolts into the ends of the plywood panels as very simple and easy-to-adjust levelers. **AW**



5 Lock the table together with bolts and T-nuts. The T-nuts are buried in wood blocks that are screwed to the table's end panels. Locating the blocks in exactly the right spot is easy. Step 1. Thread the blocks onto the threaded rod buried in the rail. Step 2. Swing the rail upright. Then drive a screw through the T-nut block and into the end panel. Step 3. Unthread the bolt from the T-nut block. Fold the rail down and out of the way. Then drive in the bottom screw through the T-nut block.

You can build this workhorse in a day, using little more than a tablesaw, jigsaw, hacksaw and a drill.

CUTTING LIST

Overall Dimensions: 34"H x 35"W x 30"D

Part	Name	Qty.	Material	Width	Length
A	Top	1	3/4" plywood	30"	35"
B	Long End Panel	1	"	30"	30-3/4"
C	Short End Panel	1	"	30"	30"
D	Rail	1	"	16"	30"
E	Rail	1	"	15-1/4"	30"
F	Riser Blocks	6	3/4" solid wood	1-3/4"	30"
G1	Wide Spacer	1	3/4" plywood	5-1/4"	31-1/2"
G2	Narrow Spacer	1	3/4" plywood	4-1/4"	31-1/2"
H	T-Nut Blocks	4	3/4" plywood	1-1/2"	4"
J	Fillers	4	5/16" solid wood	1/2"	6-5/8"
K1	Legs	2	3/4" solid wood	3"	30-5/16"
K2	Legs	2	3/4" solid wood	3"	30-3/8"
L	Feet	4	3/4" solid wood	3/8"	2"
M	Rods	4	5/16" threaded rod		8"
N	Handle	1			

Shopping List

- 1 4' x 8' sheet birch plywood
- 16 Lineal feet 3/4" x 1-3/4" hardwood
- 12 Lineal feet 3/4" x 3" hardwood
- 4 T-knobs, 5/16" thread
- 1 5/16" threaded rod, 36" long
- 4 5/16" T-nuts
- 4 1/4" T-nuts
- 4 1/4" x 1" hex-head bolts
- 4 5/16" I.D., 3/4" O.D. washers
- 4 Continuous hinges, 1-1/2"W, 30"L
- 100 1/2" #6 FH sheet metal screws
- 25 1-1/4" #8 FH screws
- 1 Handle (large)
- Thread-locking glue for rods

Sources See page 108

Classic Jewelry Box

Is there someone important in your life who's tired of the junk-drawer approach to storing jewelry? Before you buy them another pair of earrings, build this classic jewelry box and give them a special place for jewelry, treasured mementos, photographs, stationary—whatever. Build it and they will fill it.

Design Features

There's a lot to this little box. We've featured:

- A traditional design, made from mahogany for a rich, classic look.
- Easy-to-make custom moldings that no off-the-shelf router bit can give you.
- A couple nifty tricks that guarantee perfect miters on the box sides.
- A velvet-lined insert that looks great and is easy to make.
- Versatility. If a jewelry box isn't your thing, how about a keepsake box for special letters, stationary or other heirloom items.

Tools and Materials

To build this box you'll need a tablesaw, a bandsaw or jigsaw, a router in a router table, and a planer. No need to buy router bits with expensive specialty profiles. All you need are 1/2-in. cove and both 1/4-in. and 1/8-in. round-over bits (see Sources, page 108).

Honduras mahogany makes a beautiful, rich-looking jewelry box, and is a perfect choice for this traditional design. Plan on using about 5 bd. ft. (\$45) of 3/4-in. material. The box and insert bottoms are 1/4-in. plywood. Three sheets of self-adhesive velvet (\$25) are used to line the insert. A pair of jewelry box stop hinges (\$20) hold the lid open at 95 degrees. A brass escutcheon (\$6) dresses up the box front. Total cost is \$87. (For Sources, see page 108.) Let's get started.



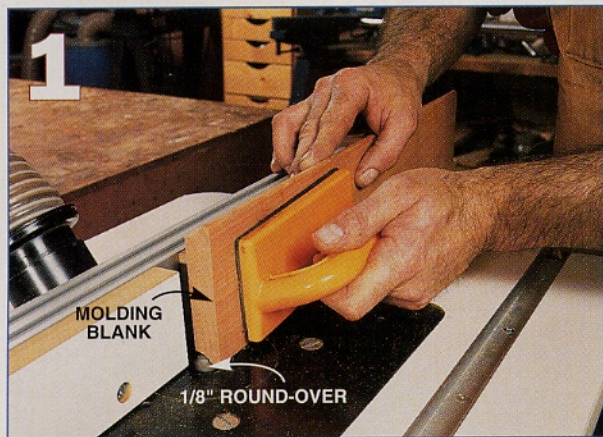
*Elegant, custom molding profiles
from three basic bits
you probably already own.*



By George Vondriska

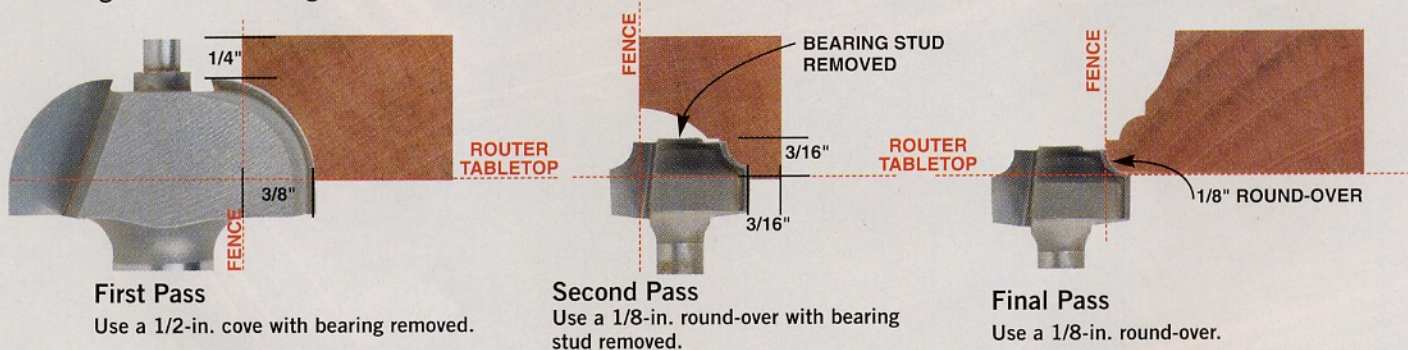
Base Molding

The moldings on the base are made using two basic bits; a 1/2-in. cove and a 1/8-in. round-over. Note: You'll have to remove the bearing stud on the 1/8-in. bit to allow the bit to reach into the cove (see Fig. A). The stud is made of soft metal that can easily be filed off by hand.

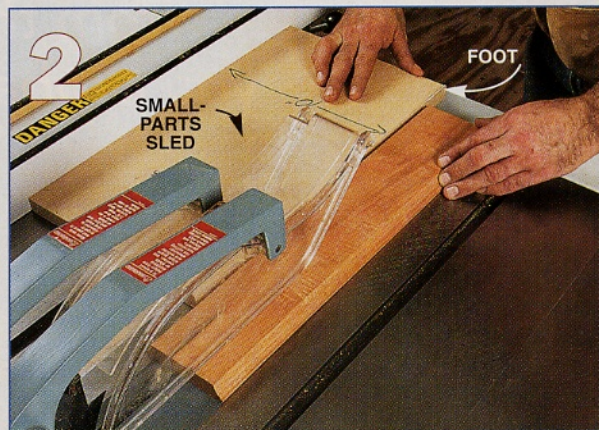


Make the second cut with a 1/8-in. round-over bit and the board held on edge. Set the bit as shown in Fig. A. Note that the bearing must be removed and the bearing stud filed off for clearance.

Fig. A Base Molding



Start with two molding blanks of 4-in. wide x 18-in. long mahogany. Rout both edges of each blank, following the sequence shown in Fig. A and Photo 1. Then, rip the moldings off the blanks (Photo 2).

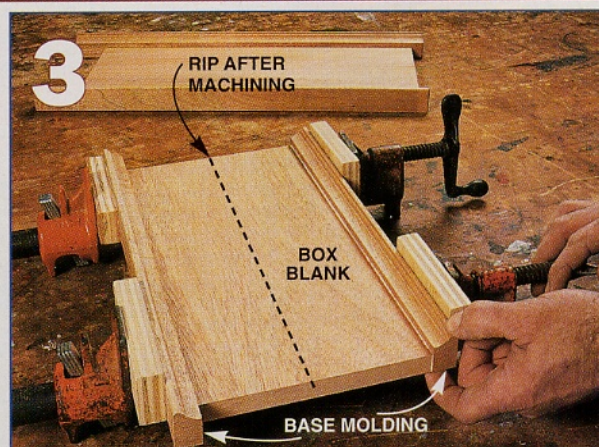


Rip the molding to width using a small-parts sled on the table saw. This is a safe way to cut small pieces because it allows you to leave the guard in place. The sled is simply a 10-in.-wide piece of plywood with a foot glued to the back end. The foot catches the end of the material being ripped. Set your fence to 11-1/4 in. (10 in. plus 1-1/4 in. for the molding).

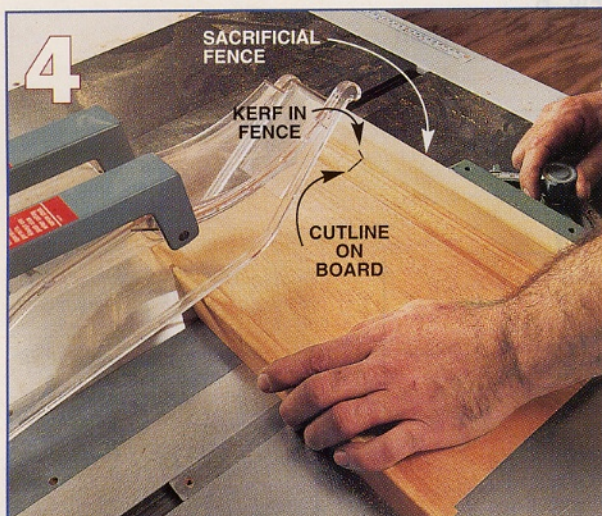
Box Sides

Here's an old trick that guarantees perfect miters by keeping the parallel sides exactly equal in length. Start by making two blanks for the box sides. Each blank should be at least 6-5/8-in. wide with an extra 1/2 in. on the finished length. Glue base molding to both edges of each blank (Photo 3). Cut the miters and spline grooves in each blank (Photos 4 and 5). Rip the two blanks to finished width. Plow a dado for the box bottom (Photo 6) and notch the back for the hinges (Photo 7).

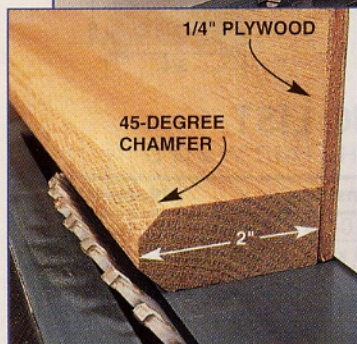
Make the splines by planing down stock to fit the saw kerf. Rip the splines from the planed stock (Photo 8). Now you're ready to glue up the box (Photo 9).



Glue the base molding to both edges of the box blanks. Be certain the bottom of the molding and the bottom of the blanks are flush. The box blanks are ripped into two equal-length sides after the miters and spline kerfs are cut in the ends (Photos 4 and 5).



Miter the box blanks to length. A sacrificial fence on the miter gauge prevents splintering and acts as a line-of-cut indicator. Just align the cutline on the board with the kerf in the fence. Miter some scrap pieces to use for test cuts when splining.



Build a kerfing jig with 1/4-in. plywood and 3/4-in. hardwood. The 45-degree chamfer supports the mitered ends of the box while the kerf is cut.

Cut a kerf into the miters on each piece to receive the splines. Use this simple kerfing jig to accommodate the overhanging base molding. Use a push pad, and make test cuts in scrap to get the fence location and blade height right (Fig. C, Detail 1).

The blade guard must be removed for this cut. **Be careful.**

Testing Miter Angles

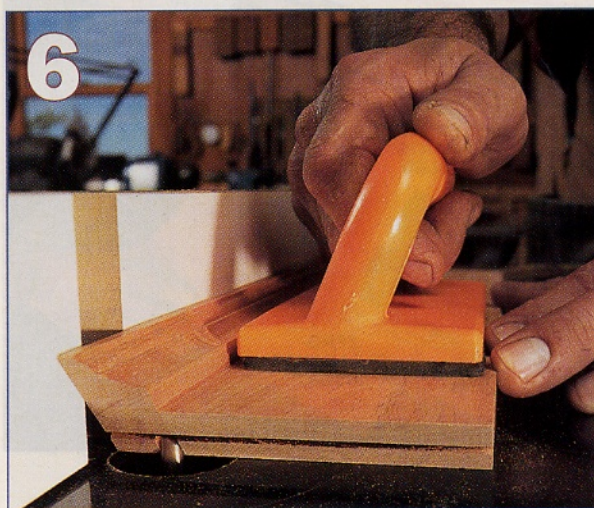
Tight-fitting miters require perfect 45-degree angles. Don't rely on your saw's positive stop. Try this surefire method instead.

Set the blade at 45 degrees and make a cut in a squared-up test board. Then, flip the board around and make a second cut to create a V-shaped notch. Hold the test board up to a light source, and fit a square into the notch. Look for any light between the square and the cuts. If needed, adjust the blade angle until the square nests perfectly in the notch.



The blade guard must be removed for this cut. **Be careful.**

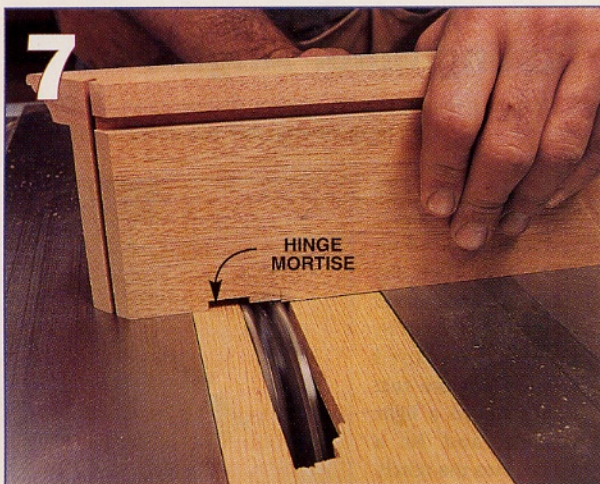
You can't buy an off-the-shelf bit to make these moldings!



Machine a groove in the sides of the box using a dado head or router bit after ripping the blanks to finished width. This groove will house the bottom of the box.

JEWELRY BOX

Box Sides



7 Use a dado set or router table to cut the hinge mortises. The mortise should be deep enough to accept both leaves of the hinge. A sacrificial fence on the miter gauge prevents splintering.

The blade guard must be removed for this cut. **Be careful.**

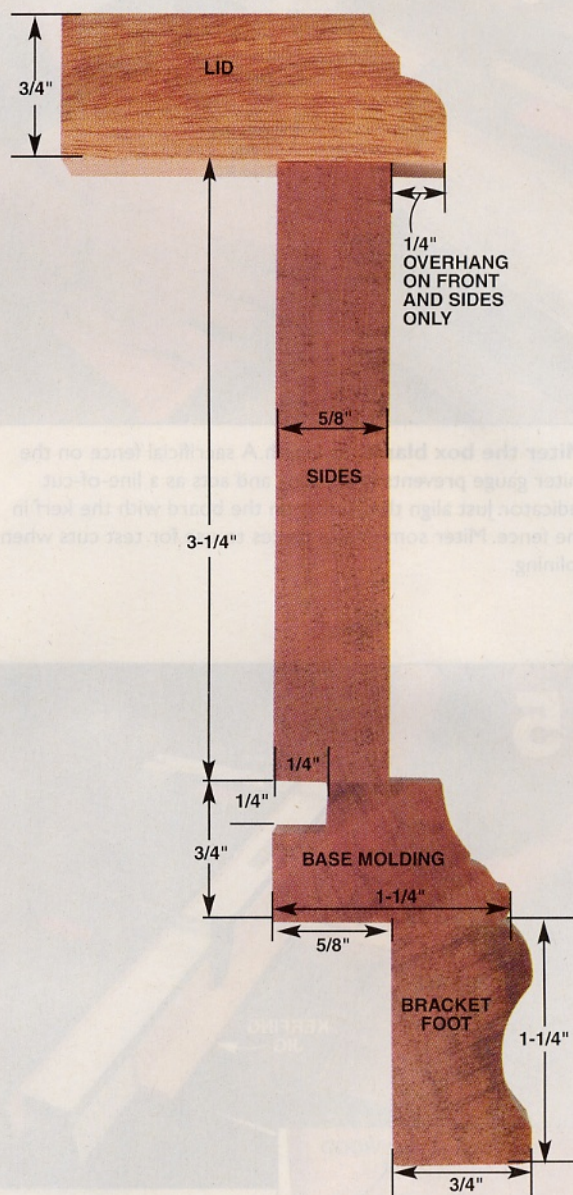
Tip

Glue the moldings to the sides and miter them at the same time. That way they all fit perfectly.



8 Rip spline material using the small-parts sled. A zero-clearance insert in the tablesaw prevents the splines from getting trapped between the blade and the insert opening. Test the fit of the spline, and nudge the rip fence, if necessary. It typically takes some trial and error to get the right fit.

Fig. B
Box Cross Section



CUTTING LIST

Overall Dimensions: 6"H x 17-1/2"W x 12"D

Part	Name	Qty.	Dimensions	Material
A	Box Lid	1	3/4 x 10-3/4 x 16-1/2	Mahogany
B	Front/Back*	2	5/8 x 4 x 17-1/4	Mahogany
C	Ends*	2	5/8 x 4 x 11-3/4	Mahogany
D	Bracket feet	8	3/4 x 1-1/4 x 2-3/4	Mahogany
E	Bottom	1	1/4 x 9-5/8 x 15-1/8	Plywood
Insert				
F	Front/Back	2	3/8 x 2-7/8 x 14	Hardwood
G	Ends	2	3/8 x 2-7/8 x 9-3/16	Hardwood
H	Bottom	1	1/4 x 9-3/16 x 14-11/16	Plywood
J	Dividers	1	3/32 x 2 x 14	Hardwood
K	Dividers	3	3/32 x 2 x 8-1/2	Hardwood

* Dimensions include miters and base molding

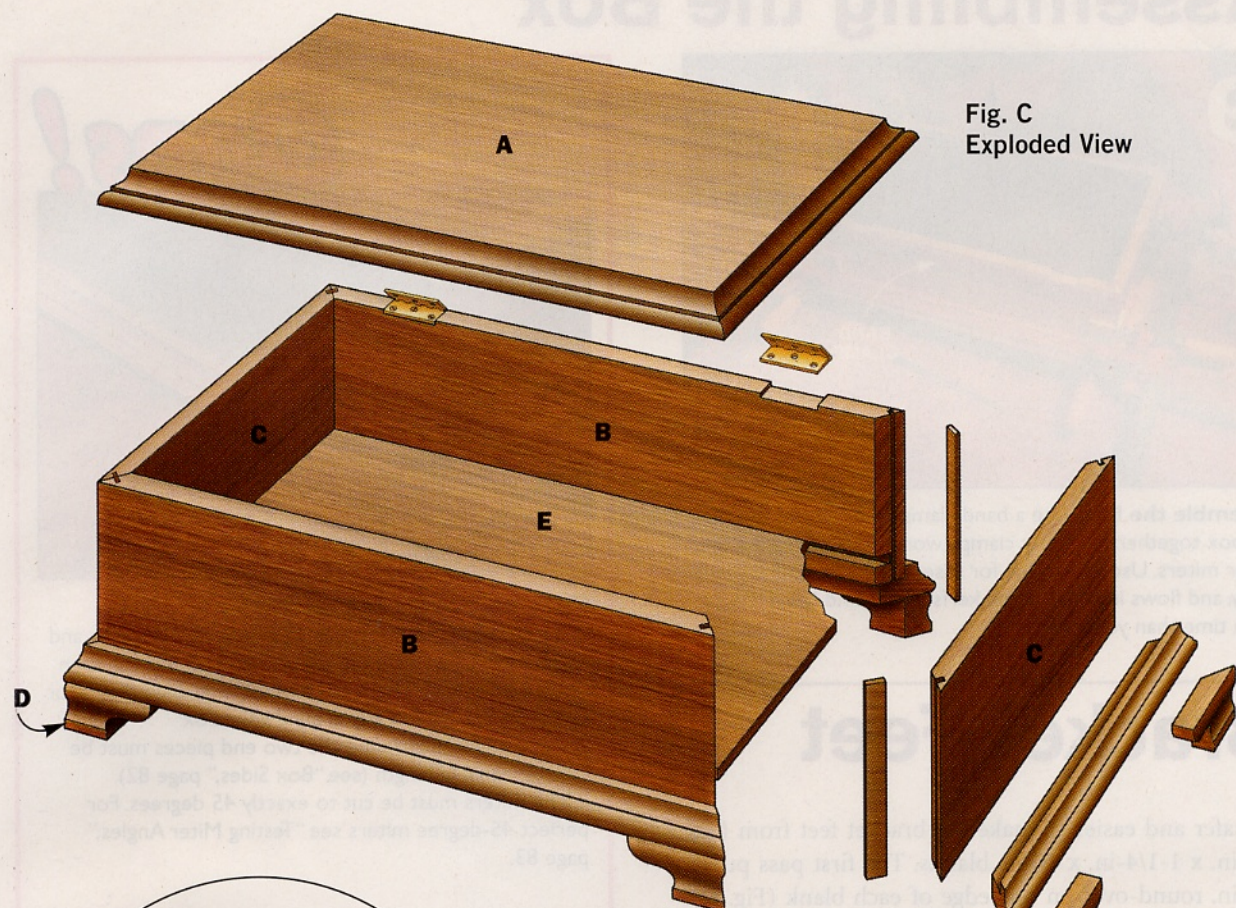
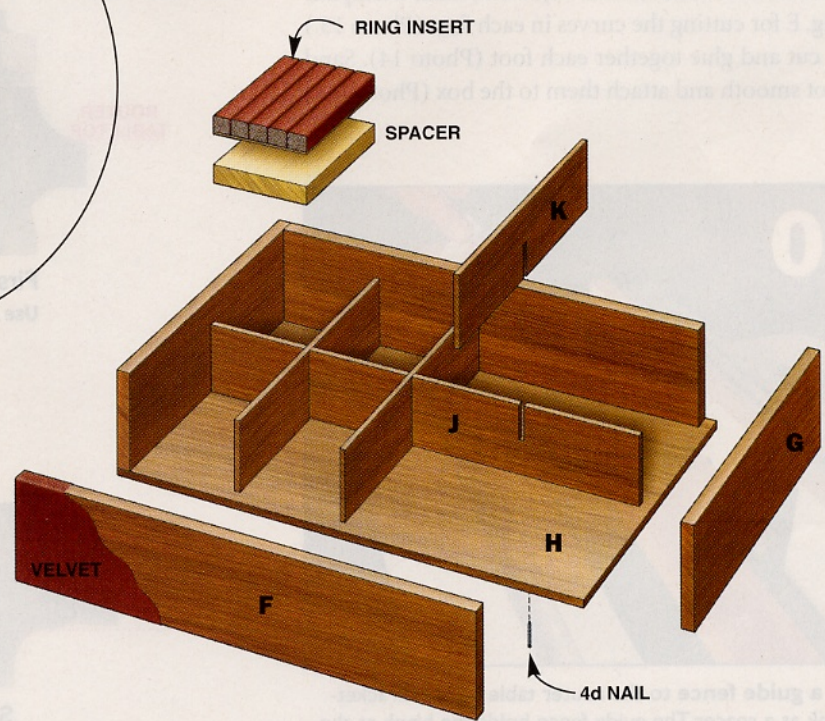
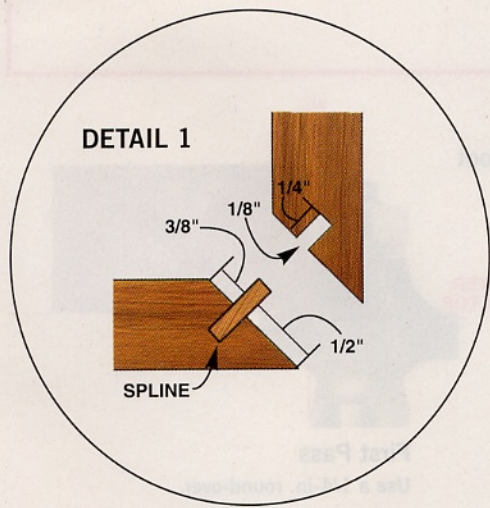
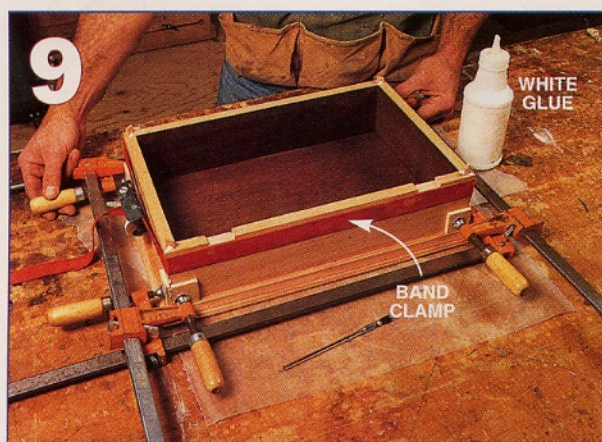


Fig. C
Exploded View



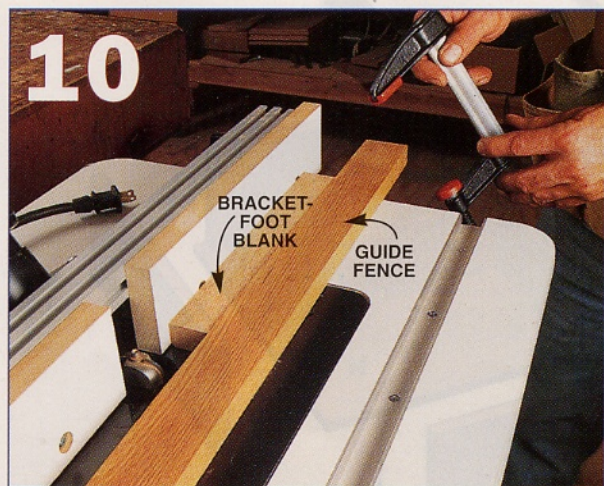
Assembling the Box



Assemble the box. Use a band clamp to draw the top of the box together. Small bar clamps work best for closing the lower miters. Use white glue for assembly because it spreads easily, and flows into the spline kerfs better and has a longer open time than yellow glue.

Bracket Feet

It's safer and easier to make the bracket feet from four 3/4-in. x 1-1/4-in. x 10-in. blanks. The first pass puts a 1/4-in. round-over on one edge of each blank (Fig. D). For the second pass, chuck a 1/2-in. cove bit into your router. Set the fence and bit height (Fig. D). Rout the coves in each blank using a guide fence (Photos 10 and 11). Cut the miters on each blank (Photo 12). Then, make a template from Fig. E for cutting the curves in each foot (Photo 13.) Finally, cut and glue together each foot (Photo 14). Sand each foot smooth and attach them to the box (Photo 15).



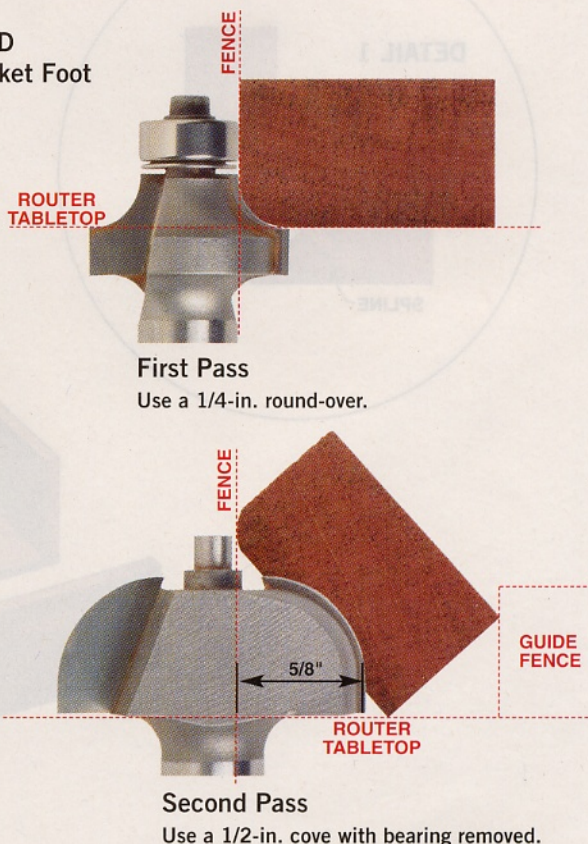
Clamp a guide fence to the router table using a bracket-foot blank as a spacer. The guide fence holds the blank at the correct angle to produce the required cove.



What went wrong? I can't get the last miter tight! A mitered box can be an unforgiving project. Lengths and angles have to be dead on or you'll end up with an open miter somewhere. There are two essential ingredients for perfect miters all the way around your box:

1. The front and back and the two end pieces must be exactly equal in length (see "Box Sides," page 82).
2. The miters must be cut to exactly 45 degrees. For perfect 45-degree miters see "Testing Miter Angles," page 83.

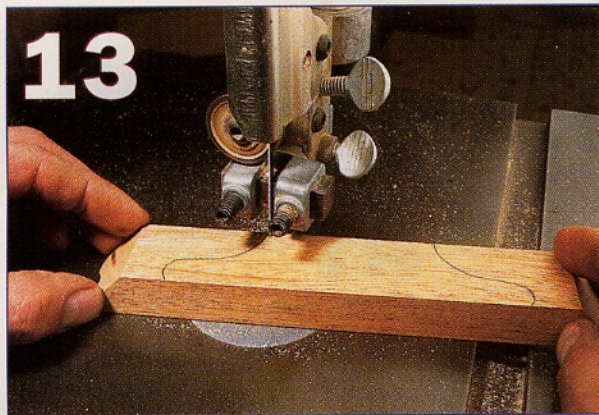
Fig. D
Bracket Foot



Bracket Feet



Machine the cove into the bracket-foot blanks by angling them between the router-table fence and the guide fence. Use a push stick to maintain pressure on the upper corner of the blank.



Cut the bracket-foot curve using a bandsaw or jigsaw. First, make a template from Fig. E to trace the profiles on each blank.



Glue and nail the feet to the box bottom. A couple of 5/8-in.-thick scraps from the box sides make perfect spacers for placing the feet. Mahogany is soft enough to power-nail without splitting. If you're hand nailing, predrill 1/16-in. pilot holes.



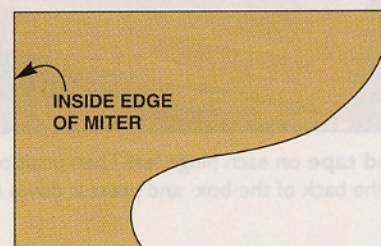
Miter both ends of the bracket-foot blanks.



Glue the bracket feet together with yellow glue. Yellow glue sets faster than the white glue used for assembly. Use your hands as clamps. Holding the feet for a minute or so will provide an initial bond. Place the glued-up feet on waxed paper so they won't stick to your bench as the glue dries.

Fig. E
Bracket Foot

Copy and cut out this full-scale profile to use as a marking template.



The Lid

Cut the lid to its finished size and follow the cutting sequence in Fig. F and Photo 16 to make the edge profile.

To mount the lid, fasten the hinges to the box. Be sure to predrill the holes and use steel screws at first! Use double-faced tape to position the top (Photos 17 and 18).



Rout the second pass in the lid using the 1/4-in. round-over bit as shown in Fig. F.

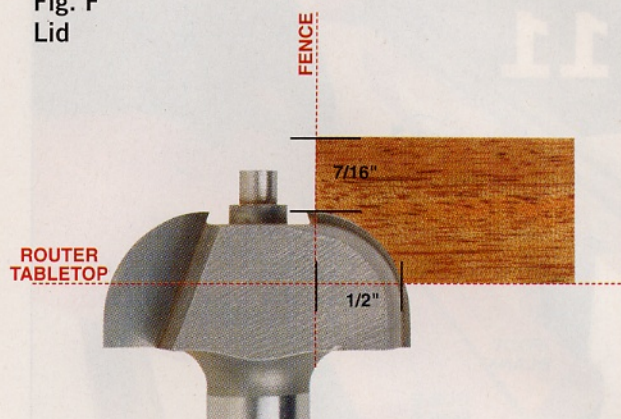
Tip

Make your life easier by prefinishing the box bottom and interiors before assembly.



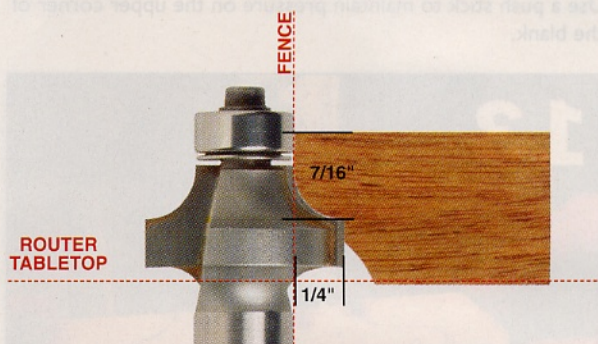
Put double-faced tape on each hinge leaf. Then position the lid flush with the back of the box and press it down on the tape.

Fig. F
Lid



First Pass

Use a 1/2-in. cove with bearing removed.



Second Pass

Use a 1/4-in. round-over.



Carefully flip over the box, with the taped-on lid, and mark the screw locations. Then, predrill and screw the hinges to the lid. Protect the top of the lid with a carpet pad on the bench. **Warning!** Don't use the screws that come with the hinges. They're too long and will run right through the top! Replace them with #4 x 1/2-in. screws.

Insert and Dividers

I had enough mahogany left over to make the insert, but any wood will do. Plane the insert stock to 3/8 in. and rip to width. Cut the end pieces to length first (Photo 19). Sand a slight radius on the top edges so the lining will fit better. Then wrap the insert ends with self-stick velvet (Photo 20). Set the wrapped ends in the box and mark the length for the front and back. Cut the front and back 1/16 in. less



Mark and cut the insert ends 1/16-in. shorter than the interior dimension of the box, so they can slide in.



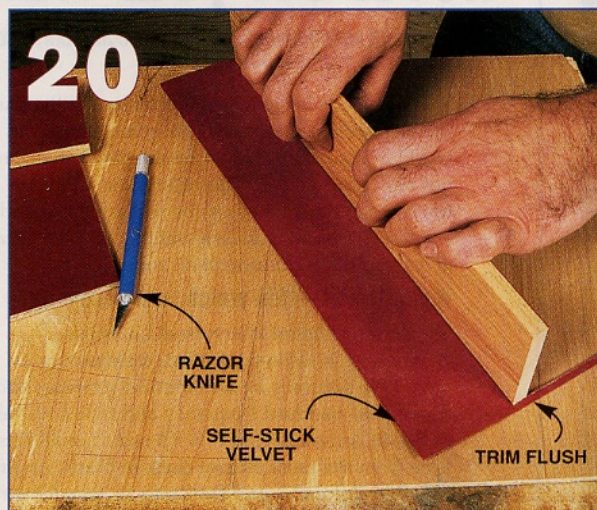
Hand-nail the insert together with 4d brads. With a brad nailer, it's too easy to blow a nail out through the narrow sides.



To get that deep, rich red-brown color on the mahogany, we used TransTint medium brown dye (see Sources, page

than the mark. Wrap the front and back in velvet. Cut and wrap the bottom and assemble the insert (Photo 21).

The internal dividers are held together by half-lap joints. Plane the divider material 1/32-in. narrower than the kerf they fit in to allow for the velvet. Wrap the dividers first, then cut the half-lap kerfs (Photo 22).



Wrap the end pieces using self-adhesive velvet (see Sources, page 108). Be certain there aren't any chips or dust on the wood before wrapping. Leave a little overhang on each edge, then carefully cut it off with a razor knife. Press the velvet flat.



Cut the internal dividers in a gang to guarantee that the cuts line up. A sacrificial fence on the miter gauge prevents excessive velvet fraying.

Finishing

108). Thin and apply the dye according to the directions until the desired shade is achieved. Then, topcoat with spray lacquer. **AW**

Sources See page 108

Small Shop Tips



ADJUSTABLE SAW CARRIAGE BOARD

Portable Miter Saw Station

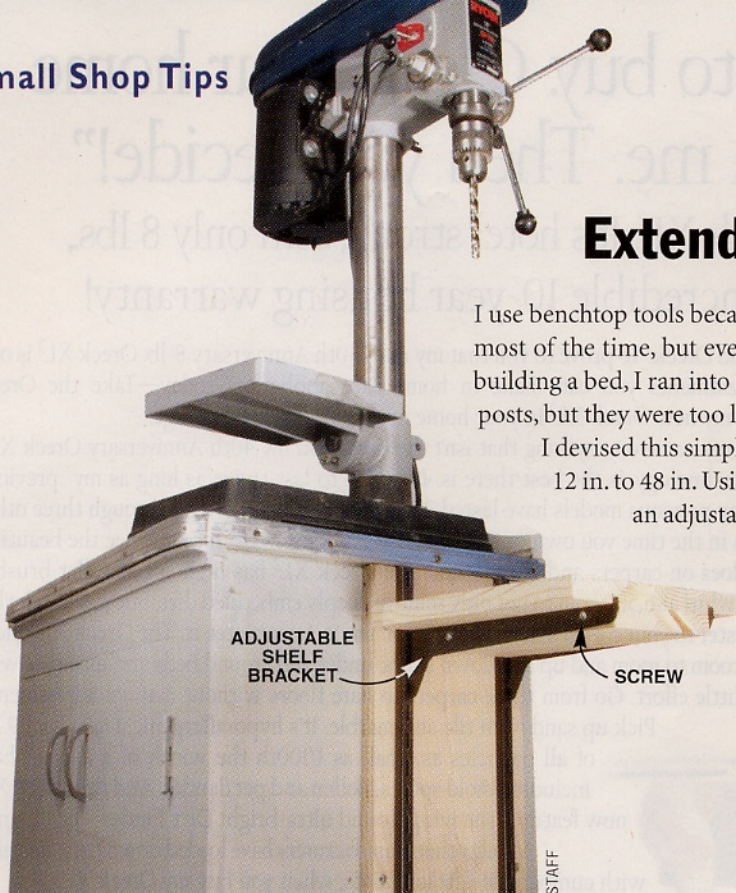
I just don't have room in my crowded shop for a permanent miter saw setup. Consequently, I designed this miter saw station to easily knock down when I'm not using it.

I started with an 8-ft. 2x12 that was flat and straight. (A couple of pieces of 3/4-in.-thick plywood glued together would also work.) I routed a groove down the middle of the 2x12 for the metal T-track. Then I screwed my miter saw to a plywood carriage board, which I fastened to the T-track with T-bolts and knobs. This allows me to slide my saw to

either end when cutting long boards. I added two sliding support brackets which are also attached with T-bolts and knobs. The brackets support the ends of my boards when I'm sawing. I added a flip-up stop to each bracket so I can make multiple parts of the same length. When I'm not using my miter saw station, I simply remove the saw and stand the 2x12 on end, secured against a wall. The whole setup cost me about \$50.

James A. Williar

Sources See page 108



Extended-Reach Drill Table

I use benchtop tools because I have a *small* basement shop. I manage fine most of the time, but every so often I have to improvise. Recently, while building a bed, I ran into a problem. I had to drill into the end of the bed-posts, but they were too long for my benchtop drill press.

I devised this simple way to extend the reach of my drill press from 12 in. to 48 in. Using shelf brackets and a couple of boards, I made an adjustable drill table that attaches to the side of my cabinet. To use it, I loosen the head of my drill press, swing it to the side and retighten it. When I'm done using the shelf, I just remove it, store it away and readjust the head of my drill press.

Travis Larson

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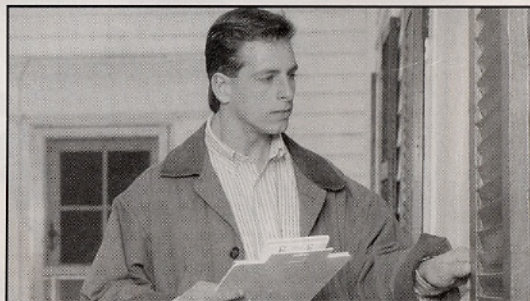
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Dado Blade Carrier

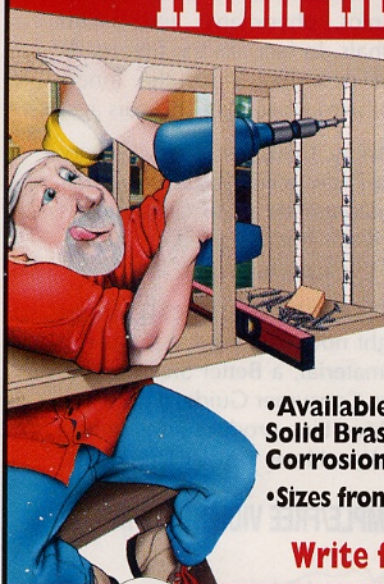
I recently bought a dado blade set and decided right off to build a carrier for it. I designed my carrier with a separate spot for each blade. This makes it easy to access blades individually and keeps the teeth from touching so they don't get chipped. The scoring blades are hung on a 5/8-in. dowel and a 1/2-in. rare-earth magnet holds them securely in place. One thing I like about my design is that there are no nuts to remove or loose parts to misplace. **AW**

Don Dickens

Sources See page 108

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MAHOGANY DRESSER BY ROBBIE STAPLES

Quilted Honduras Mahogany

If mahogany is the king of fine-furniture and cabinetry wood, quilted mahogany is the jewel in the king's crown. The quilted figure looks three-dimensional, with closely crowded, elongated, billowy bulges.

While quilted Honduras mahogany (*Swietenia macrophylla*) is not hard to find, the amount of figure shown here is rare. No wonder the price tag can get as high as \$50 a bd. ft. Many woodworkers stretch their dollars by resawing this premium wood into veneer that can be applied to drawer fronts or used as door panels.

Honduras mahogany is prized for its exceptional working and finishing characteristics. *Quilted* Honduras mahogany, on the other hand, needs special attention when machining or finishing. The unruly grain pattern often causes tear-out. To reduce this problem, try wetting the wood before you send it through the planer.

The right finish will bring out the best in the quilted pattern. Start with two applications of dye. Sand down the first application so the dye remains in the pores. Add the second coat of dye to really make the figure pop. Finally, a clear topcoat yields an amazing 3-D effect that makes the wood come alive.

We got our quilted Honduras mahogany from Hearne Hardwoods in Pennsylvania. Prices range from \$10 to \$50 a bd. ft., depending on thickness (4/4 to 16/4) and the intensity of figure in the wood. **AW**

Sources See page 108

Know of some Great Wood?
We'd love to hear about it.
Write Dave Munkittrick at
dave_munkittrick@readersdigest.com.

PHOTO BY MIKE HASERMAN

The 3-D effect in quilted Honduras mahogany is so pronounced, you'll be tempted to touch the board just to see if it's really flat.

ART DIRECTION: PATRICK HUNTER