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The following projects were featured in *Popular Woodworking* in the last couple years. In each free plan you get a cutting list, a description of the construction process and a downloadable construction drawing in PDF format.



Byrdcliffe Cabinet

The furniture built by the Byrdcliffe Arts & Crafts Colony in the early 20th century is rare, unusual and expensive. Luckily, it's easy to build at home. [CLICK HERE](#)



Stickley Side Table

The first step to building a Morris chair [CLICK HERE](#)



Pattern Cutting on the Table Saw

With a simple jig, as seen in these free woodworking plans, you can transform your table saw into an accurate pattern-cutting machine. [CLICK HERE](#)



A Contemporary Mobile File Cabinet

Looking for a sleek and contemporary project that helps organize? Just read this free plan to see how easy it can be. [CLICK HERE](#)



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\$175 Workbench

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Contemporary Shelves

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Drill Press Table

Drill presses are designed mostly for metalworking. Dress yours up with this table - we give you all the project plans - and you'll find it indispensable for woodworking, too. [CLICK HERE](#)

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Pattern Cutting on the Table Saw

With a simple jig, you can use your saw to cut duplicates of parts.

Sure, I have a router and a handful of pattern-cutting bits. But many times when I need to make duplicates of an odd-shaped part, I turn to my table saw instead.

With a shamefully simple jig (it's two pieces of wood) clamped to my saw's fence, I can cut patterns all day long. I think it's faster than pattern cutting with my router for several reasons.

First, when roughing out the shape of the blank on my band saw, I don't need to cut real close to my line like I do when pattern routing. I only have to get within 1-1/2" of the line instead of within 1/16" to 1/8".

Second, there's less clamping involved with this table-saw method. Normally I screw or nail my template to the side of the part that won't show (the underside of a shelf, for example) and go. I can do this with pattern routing, too, but I'll still need to clamp everything to my bench, make part of the cut, readjust the clamps and then finish the cut. When I use the table saw, I screw it and cut it.

Build the Jig

The jig should take five minutes to build. It is simply two narrow strips of 3/4"-thick wood nailed and glued on one long edge into an "L" shape. One of the strips of



This complex shelf was traced, roughed out and trimmed to size in less than five minutes with only one clamping setup. Try that with your router.



Once your jig is clamped to your fence, you need to align its edge with your sawblade. A square will get you close, but a follow-up test cut or two will get you exactly where you want to be.



One of the big advantages to cutting patterns with your table saw is you don't have to be real accurate when roughing out the stock. With a router, you need to cut pretty close to the line so the tool can handle trimming the last bit of stock flush. With this table saw setup, you have to be within 1-1/2" of your line — which means you're much less likely to accidentally cross it, too.



wood should be as long as your table saw's fence. Its width depends on how thick your project's stock is. For cutting patterns in $\frac{3}{4}$ " stock, rip this board to 1- $\frac{5}{8}$ " wide. The second one should be 1- $\frac{3}{4}$ " wide and about 6" shorter than the first board. Nail and glue these two boards together using the drawing as a guide.

For this cherry corner cabinet, I screwed the pattern to the shelf on its sappy underside. A couple brad nails would also do the trick. Align the shortest part of the pattern flush with a jointed or straight-sawn edge.

Set Up Your Jig and Use It

Install a quality combination blade in your saw. Clamp the jig to your fence with the jig flush to the table. Slide the table saw's fence over so the jig overhangs the blade and raise the blade until it almost touches the jig.

Using a square, line up the edge of the jig with the edge of your sawblade's teeth. Now wax the edge of the jig to make things slide more easily.

Screw a couple pieces of scrap together and test your setup. When the cut is complete, the two pieces should be perfectly flush. Adjust the fence until this is the case.

Now you're set. Align the shortest part of the pattern with a jointed or straight-sawn edge. Trace the pattern on your stock using your template as a guide. Rough out its shape using your band saw and then screw the template to your stock. Push the pattern against your jig's face and slide it forward. Be cautious when sawing short lengths. You'll probably be surprised how accurate and easy this is, and

give your router a rest every
once in a while. **PW**

Christopher Schwarz is a senior editor at
Popular Woodworking

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Byrdcliffe Cabinet

An excellent lesson in basic cabinet construction.

This simple and well-proportioned cabinet is one of the oddities of the Arts & Crafts movement, which swept the country at the turn of the 20th century. Unlike most fashionable furniture of the day, this hanging cabinet was made with poplar instead of white oak, was stained a light green instead of dark brown and was designed by a woman.

Zulma Steele (1881-1979) was a painter, printmaker, framemaker, ceramist and designer of books, wallpaper and furniture. She was one of the first artists at the Byrdcliffe Arts Colony in Woodstock, N.Y., a utopian community that opened in 1903.

Though the colony didn't make much furniture (some estimates say it was only about 50 pieces), the originals now fetch incredible prices at auction. I've always been bewitched by this particular cabinet and have found it an excellent piece for teaching basic cabinetmaking principles such as dados, rabbets, shiplapped backs and frame-and-panel doors.

It's also inexpensive to build because it requires only 25 board feet of 4/4 poplar, a common and inexpensive wood. When choosing your lumber, look for boards that are similar in color. Poplar can be creamy white, light green, dark green, black or

purple. If you unwisely use all these colors together, the project is going to look like the Jolly Green Giant after a bar fight.

A Table Saw Project

Once you get your wood to the proper thickness, rip and crosscut all the boards for the case. The first joint to tackle is the rabbet, which joins the sides to the top and bottom. It also creates a recess to hold your shiplapped backboards in place.

There are many ways to cut rabbets. I like to install my dado stack in the table saw with enough chippers to make the cut I need (and then some), which would be 7/8" in this case. Then I clamp a straight piece of wood to my table saw's rip fence and bury the dado stack in it. With this setup, the width of my rabbet is the measurement between the scrap wood fence and the outside teeth of the dado stack. The depth of the rabbet is controlled by raising and lowering the blades.

Begin with the sides. Cut 1/4"-deep by 3/4"-wide rabbets on the ends of the side pieces, then come back and cut the same rabbet on the back edge of the side pieces. Find your top and bottom pieces and cut the same rabbet on the back edge of each.

Before you move on to the joinery in the rest of the case, get out your boards for the back. The backboards are "shiplapped," which means the edges overlap

each other. To get this effect, set your dado stack to make a 5/16"-deep by 1/2"-wide rabbet and cut it on one long edge of a backboard. Flip the board on its other face and then cut the same rabbet on the other edge. Do this for all the boards. Then cut a bead on the long edges of the backboards using an 1/8"-radius beading bit in your router.

Dados Handle the Rest

The case's divider and shelf are held in place by 1/4"-deep by 3/4"-wide dados. To make perfectly fitting dados, I usually cut mine just a bit undersized. We're talking about a few thousandths of an inch here, which is easy to measure with a dial caliper. Once I get to the assembly stage, I plane or sand the divider and shelf to fit.

To cut the dados, set up your dado stack, mark the location of your dados on your workpieces and make the cut using an aftermarket miter gauge equipped with a long fence and stops.

Assemble the Case

Next, take your cabinet parts to your assembly bench. Before you glue up this case, sand or plane down all the interior surfaces. If you choose to sand, start with 120-grit paper and finish with 220-grit. If you're planing off the machining marks, use a #4 smoothing plane.

Now dry-assemble your case.

Once you're satisfied, spread a thin coat of glue on the two faces of the rabbets and the three faces of the dados. Assemble the parts and clamp it down.

To ensure your case is square, measure the inside of the case diagonally from corner to corner. The measurements should match up. If they don't, put a clamp across the two corners that produced the longer measurement. Apply slight pressure until the diagonals are equal measurements.

After the glue cures, take the case out of the clamps and nail the sides to the top and bottom. Don't be ashamed of nails. When the glue fails on this cabinet (long after we're gone) it's the nails that will keep things together.

To complete case construction, screw the backboards in place with a quarter's worth of space between each board. For the backboards on either end, add screws on the side, top and bottom. The boards in the middle get only one screw at the top and the other at the bottom. This screw placement allows for wood movement.

The Easy Door

The door also is built entirely on the table saw. Because this door is lightweight, join the rails and stiles using stub tenons. Stub tenons are short, merely fitting into the groove you cut in the rails and stiles for the door panel.

First mill the 1/4"-wide by 1/2"-deep groove in the rails and stiles that will house the panel and the stub tenons. For this, the best saw blade is a rip blade that has flat-top teeth. Set your saw's rip fence so there's 1/4" between the blade and rip fence, and cut half the groove by pushing one face of the stile, then the other, against the rip fence. Repeat the same process with the rails.

Now cut the matching tenons on the ends of the rails using your dado stack. Set it up just like you did for cutting rabbets with a scrap wood fence clamped to your rip fence. Set the blades to make a 1/4"-deep by 1/2"-wide rabbet. Using your miter gauge, guide your rails against the fence and over the blades. Flip the rail over and make the same cut on the other face. Now make the identical cuts on the other end of the board.

Ensure everything fits, then cut your panel to size. Cut a rabbet on all four edges of the panel so it will fit in the groove. Keep the height of the dado stack the same, but set the rip fence so you can make a 5/8"-wide cut. Cut this rabbet on all four edges of the backside of your panel.

Door Assembly

Sand or plane your door panel so it's ready for finishing. Do a dry-assembly. When you're satisfied with the fit of your joints, glue the two rails to one stile and slip the panel in place without glue.

Remember that the rabbet goes on the inside of the door, not facing out. Glue the rails to the other stile and clamp your joints. Check your door to make sure it's square and allow the glue to cure.

When the door is complete, add the 1/8" x 1/8" trim around the panel. These are fitted on the panel and glued only to the rails and stiles to allow the door panel to expand and contract.

With the trim installed, joint one long edge of the door's stile. Then square up the door by ripping and crosscutting it to its final shape. If you're using the no-mortise hinges specified in the supplies box, you'll want a 1/16" gap all around between the case and the door. Hang the door in the cabinet. The hinges allow a certain amount of adjustment. Add a magnetic catch and knob and get ready to cut the iris for the panel.

Easy Iris Puzzle

I'm not much of a carver, so I chose to add the iris to the door panel by scrollsawing it out of 1/8"-thick stock and gluing the pieces on.

Make a couple photocopies of the iris pattern. Finish-sand your wood and stick one of the patterns to your wood with an adhesive spray. Cut out the pieces with the scrollsaw set to a relatively slow speed and equipped with a fine-tooth blade. Remove the paper (lacquer

thinner works great) and sand the edges of the pieces. Glue them in place using a thin film of adhesive – this is one place you do not want the glue to squeeze out.

A Few Words About Finishing

Byrdcliffe finishes were as unusual as the colony itself. Sometimes the craftsmen and women would leave a piece unfinished, or they would add subtle paints and dyes – reds and greens mostly. One piece I've seen pictures of was a perfect ochre.

The original of this cabinet was dyed green, except for the iris, which was dyed red. I built a version of this cabinet about six years ago and finished it that way, and it looks nice. But for this version I decided to choose boards that were light green and use a natural-looking finish: three coats of a satin lacquer. **PW**

To download a full-size pattern of the iris, just [CLICK HERE](#).

NOTE: This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by [CLICKING HERE](#).

Christopher Schwarz is executive editor at Popular Woodworking.

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Drill Press Table

Turn your drill press table into a woodworking table in a few hours.

Despite the fact that your drill press is designed mostly for poking holes in sheet metal, it has many uses in a woodshop. It's a mortiser, a spindle sander, it bores huge holes, and -- of course -- drills holes at perfect right angles to the table. Because the table on most drill presses is designed for metalworking, it's hardly suited for these tasks. So I built this add-on table with features that will turn your drill press into a far friendlier machine:

First, a fence that slides forwards and backwards as well as left and right on either side of the quill. This last feature also uses the drill press' tilting table feature with the auxiliary table for angled drilling.

Built-in stops (both left and right) that attach to the fence for repetitive procedures such as doweling or chain drilling for mortises.

Hold-downs that can be used on the fence or on the table for any procedure.

The sizes given in the Schedule of Materials are for a 14" drill press, with the center falling 9" from the rear edge of the table, with a 2" notch in the back to straddle the column. Adjust the center location and overall size of the table to match your particular machine.



1 Another view of the drill-press table. Here I'm cutting pocket holes in a table apron.



2 ROUT THE GROOVE The grooves for the T-slot track allow the fence to be used left-to-right and front-to-back on the table to take advantage of the built-in tilting feature of the existing table.



3 RABBET FOR THE INSERT After cutting the hole with a jigsaw, the opening is rabbeted using a bearing-piloted router bit. Then chisel the corners square and fit the replaceable center tightly into the rabbet. Make a couple extras.



4 ROCK SOLID The fence is made of a sturdy, stable hardwood. Cut a

Start With the Base-ics

The base platform for the table is made from 3/4" plywood, which should be void-free. Again, adjust the size as necessary to fit your drill press. First you need to get the table ready for the T-track, which is what holds the fence and hold-downs in place. Start by locating the four recessed holes that allow the T-slot mechanism to slip into the track without disassembling the mechanism. Each hole is 1-1/2" in diameter and 3/8" deep.

Next, locate the grooves in the center of the holes and use a router with a 3/4"-wide straight bit to cut the grooves to a 3/8" depth. The T-slot track should fit into the grooves with the top surface just below that of the plywood table. The grooves should be as parallel as possible to one another to allow smooth movement of the fence.

Replaceable Center

Now cut the hole for the 4" x 4" replaceable insert. First locate and mark the position centered on your table, then mark in from that line by 3/8" to locate your cutting line. Drill clearance holes in two corners of the square, then use a jigsaw to cut out the center piece. Next, determine the thickness of the material you will use for your insert (the 3/8"-thick Baltic Birch we used is actually metric and shy of 3/8") and set a 3/8" piloted rabbeting bit in a router to a height to hold the insert flush to the top surface of the table.

groove the length of the top and face of the fence. The grooves support T-slot tracks, which can be used for stops, hold-downs and other accessories.



5 FENCE BRACES The fence is supported by two simple brackets screwed to the rear of the fence. The location of the triangular braces is important to the track orientation, so follow the diagrams carefully for location.



6 LAYING TRACKS Install the T-slot tracks in the grooves with flat head screws countersunk into the track. The braces are attached to the fence by screwing through the face groove prior to attaching the T-slot track.



7 HOLD IT The hold-downs and stops are made from 3/4" hardwood. To make the guide to hold the stops square to the fence, cut a 1/16" x 1-1/8" rabbet on both sides of the inside face.

While your jigsaw is still out, locate, mark and cut out the notch in the back of the table. This allows the table to move closer to the drill press' post and tilt without interference.

As a final friendly touch on the table, I used a 3/8" roundover bit in my router to soften all the edges on the table, both top and bottom. You'll get fewer splinters if you do this.

Milling the Fence

The fence is the heart of the table, and the wood should be chosen for durability and straightness. Quartersawn hardwood, carefully surfaced and planed, will do nicely. After cutting the fence to size, use a dado stack to mill two 3/8"-deep by 3/4"-wide grooves in the fence. The first is centered on the top surface of the fence, and as in the grooves in the base platform, a piece of T-slot track should be used to confirm that the groove is deep enough to allow the track to fit just below the surface of the wood. The second groove is then cut centered on the face of the fence. One other bit of table saw work is the 1/8" x 1/4" wide rabbet cut on the inside bottom edge of the fence. This rabbet allows dust and debris to be pushed into the rabbet, so your work will fit against the fence.

One option that I considered was adding an indexing tape measure on the fence. Every time the table is moved the tape would need to be readjusted to zero,

and for the infrequent use the tape would see I decided against it. A stick-on tape can easily be added to the fence face if that's more to your personal taste and needs.

Fence Support Braces

Unlike the fence on a router table, the fence on a drill press table won't see a lot of lateral pressure. So the main purpose of the braces is to hold the fence square to the table at the drilling point. In my case I've also given the braces the job of mounting the fence to the table.

Start by cutting the two base plates and the four braces to size. The braces are triangles with the bottom edge 3" long and the adjoining right angle edge 1-7/8" long. The third side is determined by simply connecting the corners. Locate the braces on the base plates according to the diagrams and pre-drill and countersink 3/16" diameter holes in the base plates to attach the braces to the plates.

To mount the support braces to the fence, again refer to the diagrams to locate the proper spacing on the fence. Then drill and countersink screw holes through the face groove in the fence. Clamp the brace to the fence and screw the brace in place.

With the braces attached to the fence, use the T-slot fastener locations on the diagrams as a starting point for drilling the holes in the base plates, but check the

location against your table for the best fit. Two holes are drilled in each plate to allow the fence to be moved to the perpendicular position (either to the right or left of the quill), by simply relocating one of the T-slot fasteners. Check each hole in relationship to that position.

Attaching the Track

Assuming you purchased the 24" lengths of track listed in the Schedule of Materials, you should be able to cut the tracks for the table first, leaving fall off that can be added to the two remaining full length tracks to give you the necessary 30" lengths of track for the fence. When attaching the track, first pilot drill the hole in the center of the track (a groove is provided in the track to simplify that location), then use a countersink to widen the hole to accommodate a #4 x 5/8" flat head screw. Keeping the screws as flush as possible to the inner surface of the track will make the stops and hold-downs move much easier.

Finishing Touches

Stops and hold-downs designed for use in T-tracks make the drill press most useful. The stops are simply square blocks of wood with one side milled to leave an indexing strip that fits into the slot on the T-slot track. By using the saw to cut tall but shallow rabbets on two edges of each block, the stops are completed fairly easily. For safety, run the rabbet on a longer 2-1/2" wide piece of wood, then cut the stops

to square afterward. The T-slot fasteners are simply inserted into a 1/4" hole drilled in the center of each stop block.

The hold-downs are simply blocks of wood with DeStaCo clamps mounted to the top. Each block is drilled for two T-slot fasteners, one on either end. Then the clamp is screwed to the top surface of the block. While the DeStaCos are good for this application, they aren't as versatile as I wanted. I replaced the threaded-rod plunger with longer all-thread (1/4" x 36) to provide maximum benefit from the clamps. The rubber tip of the plunger is important to the function of the clamp, and if you can manage to reuse the existing tip it's very helpful. If not, I found rubber stoppers in a variety of sizes in the local Sears hardware store. After carefully drilling a 1/4"-diameter hole two-thirds of the way into the stopper I was able to screw it onto the rod with little difficulty.

Attaching and Personalizing

The table should attach easily to your existing drill press table using four lag bolts countersunk flush into the surface of the auxiliary table. Once attached you should find that the auxiliary table overhangs the metal table quite a bit. One personalized touch I want to suggest is adding small drawers to the underside of the table to store bits, wrenches and chuck keys. **PW**

David Thiel is a senior editor for Popular Woodworking.

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Contemporary Shelves

It's rare that bookshelves look as interesting as the objects you display on them. After all, how much can you decorate the edges of your shelves and sides? This unit is unusual because the shelves and sides are beefier than you would normally see, and the two bevel cuts on the front edges give these shelves nice visual interest. Best of all, perhaps, is that this piece is simple and quick to build.

Dividers and Shelves

Start by cutting out the sides and shelves. The 1-1/2"-thick sides are made by gluing two pieces of 3/4"-thick plywood together. The 1-1/4"-thick shelves are made by gluing 3/4"-thick plywood to a 1/2"-thick piece. Note that the finished sides have a 3/4" x 1/4" rabbet for the back that's formed by gluing a narrower piece to a wider one. The adjustable and fixed shelves in the side openings are all the same width. The center shelves are 1/4" wider to account for the lack of a back.

To cut the sides, crosscut a whole sheet of plywood to the length of the sides first, then rip them to width (11" and 11-1/4"). Cut the sides a little wide (1/16"), initially, to give yourself a little room to saw off a square straight edge. This will give you a clean edge for attaching a piece of maple later. Now nail and glue the dividers together, remembering to offset the back edge for the rabbet. Place your nails so the shelves will hide



1 Face-Glue the Parts: Once you've got your parts cut to size, glue and nail them together leaving the rabbet at the back. Set and putty the nails, then rip the dividers to their final width.



2 Profile: The bevels on the edges are basically a "V" shape on the entire edge. See the diagram at right for the details and cutting angles. Clean up your saw marks with a plane.

them.

Here's an easy way to cut the shelves. Rip them to width from a full piece of plywood, then nail and glue up a length of shelving. Then crosscut the shelves to length from the long pieces. You can get five 16" shelves out of a 96" rip. For even less work, cut the shelves to length after attaching the edging.

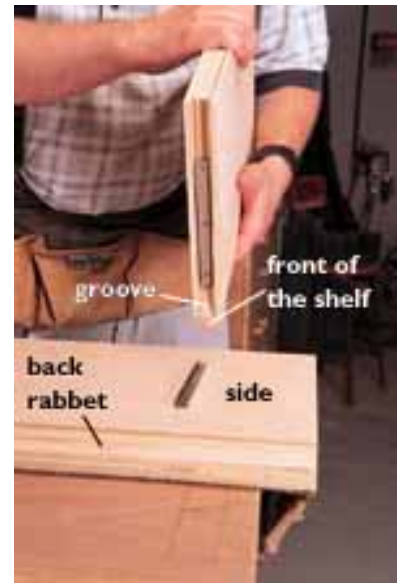
Edges and Angles

The edges for the bookshelves are solid maple. Because the thickness of 3/4" and 1/2" plywood is considered "nominal," you will end up with finished thicknesses about 1/16" less. Rip your edging stock a little wide and attach it with biscuits and glue. With a flush-cut bearing bit in a router, trim the edging flush to the sides and shelves, then clean up your work with a plane or scraper.

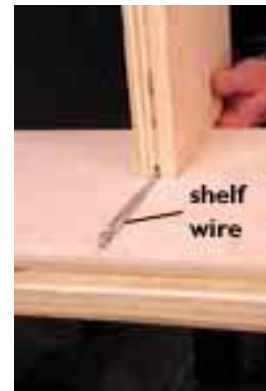
The last step is to bevel the edging. The photo shows how I did this on the table saw. Remember that the setup must change for the different width pieces.

Making it a Stand-Up Unit

The next step is to mill stopped grooves in the topmost and bottommost shelves to accept the tapered sliding connectors that attach the sides together. The grooves in the ends of the shelves are 3/4" wide by approximately 3/8" deep, and milled with a dado set on the table saw. It helps to make a practice joint because the depth



3 Mount Knockdown Hardware: Use a dado stack to cut a 3/4" x 3/8" groove from the joint where the edge attaches to the shelf to the back of the shelf. The knockdown hardware is mounted in about the middle of the shelf. It pulls together pretty tightly, so you might want to sand any bumps or ridges off the ends of the shelves to keep from scratching the sides.



4 Magic Wire: After cutting the 1/8" grooves in the shelf sides, assemble the case. Tap the wire shelf supports in and slide the loose shelves in place.

of the groove is critical to a snug fit using this style of connector.

Installing the Shelves

After cutting the slots in the shelves, lay out and mount the small part of the tapered connector to the side. The large connector will mount to the shelf groove with the wide end towards the shelf front. Do a test fit on the shelves. The shelves in the side units should be flush to the rabbet in the back edge of the sides. The center shelves should be flush with the back.

The next step is to cut the stopped grooves in the rest of the shelves for the hidden wire shelf supports. If your blade is too narrow, take two cuts to get the 1/8" groove necessary to slide the shelf onto the wire supports. Some drill and chisel work will be necessary to lengthen the kerf to accept the entire 9-3/4" length of the shelf wire. This requires drilling and chiselling into the end of the front edge. Lay out and drill the locations for the wire supports in the side and center sections so the shelf heights will match across the bookcase.

Now it's time for all the parts come together. Begin by assembling the two outside units of the bookcase. Tip them onto their backs and attach the aprons to the bottom shelf using cleats and screws. Next attach the side units together forming the center section. The best way to do this is to assemble with the front facing up. Use a handscrew

clamp to hold up the sides while you're assembling. The apron on the center bottom can be screwed onto the shelf and braced with corner blocks prior to assembly. Push the lower shelf into place and mark the location of the apron, also called a "kick" or a base. Then remove the shelf and add two stop blocks to the sides to support the center apron from behind.

When you're happy with the fit of the parts, disassemble the bookcase and finish. I applied a coat of light stain to give the maple an aged appearance. (I used about two ounces of linseed oil and colored it with Olympic stains, one-half Early American #41552, and one-half Red Oak #41567. 1/4 teaspoon of each.) Wipe on an even coat of oil. Wipe off the excess and let it dry for 24 hours. The next day, lightly sand the surfaces and clean them with a tack rag. Finish with two or three coats of a clear finish. **PW**

Jim Stuard is a former associate editor at Popular Woodworking.

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\$175 Workbench

For \$175 you can build a bench that will retire after you do.

I've hauled my grandfather's workbench across snow-covered Appalachian mountains, down narrow stairwells and into a dirt-floored garage that should have been torn down during the Eisenhower administration. I've built a lot of good stuff on that bench, but now it's time to retire the old horse. For starters, the bench is too low for the way I work. And the top is pockmarked with three different shapes and sizes of dog holes. And during the last few years I've become fed up with the tool tray. The only thing it seems designed to hold is enough sawdust for a family of gerbils. So I need a new bench, but there's no way I'm going to spend \$1,200 to \$1,400 for a high-quality bench from Hoffman & Hammer or Ulmia.

Enter Bob Key from Georgia. He and his son have been building benches using off-the-rack pine for a few years and have even built a website showing how quick and easy this is to do (visit them at www.mindspring.com/~bobkey/beginners.htm). I was impressed with their idea. So I spent a week reading every book on benches I could find. I pored over the woodworking catalogs. And after a lot of figuring I came up with a simple plan: Build a bench for less than \$175.

Believe it or not, I came in 92 cents under budget and ended up with a bench that is tough, sturdy and darn versatile. I made



1 When you glue up your top, you want to make sure all the boards line up. Lay down your glue and then clamp up one end with the boards perfectly flush. Then get a friend to clamp a handscrew on the seam and twist until the boards are flush. Continue clamping up towards your friend, having your friend adjust the handscrews as needed after each clamp is cinched down.



2 Drilling the 3/8" holes for the bolts is easier if you do it in this order. First drill the holes in the legs using your drill press. Now assemble the leg and front rail. Drill into the rail using the hole in the leg as a guide. Remove the leg from the rail and continue drilling the hole in the rail. The hole you drilled before will once more act as a guide. You still need to be careful and guide your drill straight and true.

a few compromises when choosing the hardware to keep the cost down, but I designed the bench so that it can later be upgraded with a nice tail vise. However, I made no compromises in the construction of the top or base. You can dance on this bench.

Let's Go Shopping

OK friends, it's time to make your shopping list. First a word about the wood. I priced my lumber from a local Lowe's. It was tagged as Southern yellow pine, appearance-grade. Unlike a lot of dimensional stock, this stuff is pretty dry and knot-free. Even so, take your time and pick through the store's pile of 12-foot-long 2 x 8s with care to get the best ones possible. You can hide a few tight knots in the top, but with luck you won't have to.

Here's the story on the hardware. The bolts, nuts and washers are used to connect the front rails to the two ends of the bench. Using this hardware, we'll borrow a technique used by bed makers to build a joint that is stronger than any mortise and tenon. The Bench Dog and Wonder Dog will keep you from having to buy an expensive tail vise. Using these two simple pieces of hardware, you can clamp almost anything to your bench for planing, sanding and chopping. The traditional face vise goes on the front of your bench and is useful for joinery and opening cans of peanut butter.



3 Another illustration of step 2.



4 After you cut your tenons, lay them directly on your work and use the edges like a ruler to mark where the mortise should start and end (this picture).



5 Use a 1" Forstner bit in your drill press to cut overlapping holes to make your mortise (step 5).

Preparing Your Lumber

Cut your lumber to length. You've probably noticed that your wood has rounded corners and the faces are probably less than glass-smooth. Your first task is to use your jointer and planer to remove those rounded edges and get all your lumber down to 1-3/8" thick.

Once your lumber is thickened, start working on the top. If this is your first bench, you can make the top, then throw it up on sawhorses to build the base. The top is made from 1-3/8" x 3-3/8" x 70" boards turned on edge and glued face-to-face. It will take five of your 2 x 8s to make the top. Build the top in stages to make the task more manageable. Glue up a few boards, then run the assembly through the jointer and planer to get them flat. Make a few more assemblies like this, then glue all the assemblies together into one big top.

When you finally glue up the whole top, you want to make sure you keep all the boards in line. This will save you hours of flattening the top later with a hand plane. See the photo above for a life-saving tip when you get to this point. After the glue is dry, square the ends of your assembled top. If you don't have a huge sliding table on your table saw, try cutting the ends square using a circular saw (the top is so thick you'll have to make a cut from both sides). Or you can use a hand saw and a piece of scrap wood clamped across the end as



6 Now square up the edges of the mortise using a mortise chisel and a small mallet (step 6).



7 The mortises in the front rails are also made on the drill press. Make them 1-1/4" deep to make sure you can get a washer in there. If you can't, try clipping an edge off of the washer.

a guide.

Build the Base

The base is constructed using mortise-and-tenon joinery. Essentially, the base has two end assemblies that are joined by two rails. The end assemblies are built using big 1"-thick, 2"-long tenons. The front rails are attached to the ends using 1" x 1" mortise-and-tenon joints and the 6"-long bolts. Begin working on the base by cutting all your pieces to size. The 2¾"-square legs are made from two pieces of pine laminated together. Glue and clamp the legs and set them aside. Now turn your attention to cutting the tenons on the rails. It's a good idea to first make a "test" mortise in a piece of scrap so you can fit your tenons as they are made. I like to make my tenons on the table saw using a dado stack. Place your rails face down on your table saw and use a miter gauge to nibble away at the rails until the tenons are the right size. Because pine is soft, be sure to make the shoulders on the edges 1" wide on the upper side rails. This precaution will prevent your tenons from blowing out the top of your legs.

Now use your tenons to lay out the locations of your mortises. See the photo at right for how this works. Clamp a piece of scrap to your drill press to act as a fence and chain-drill the mortises in the legs. Make your mortises about 1/16" deeper than your tenons are long. This will give you a little space for any



8 Drilling your dog holes may seem like hard work using a brace and bit. It is. However, you get an amazing amount of torque this way — far more than you can get with a cordless drill. Sadly, I had cooked my corded drill, so this was my only option.

excess glue.

Once you've got your mortises drilled, use a mortise chisel to square the round corners. Make sure your tenons fit, then dry-fit your base. Label each joint so you can reassemble the bench later.

Bed Bolts

There's a bit of a trick to joining the front rails to the legs. Workbenches, you see, are subject to a lot of racking back and forth. A plain old mortise-and-tenon joint just won't hack it. So we bolt it. First study the diagram at left to see how these joints work. Now here's the best way to make them.

First chuck a 1" Forstner bit in your drill press to cut the countersink in the legs for the bolt head. Drill the countersinks, then chuck a 3/8"-brad-point bit in your drill press and drill in the center of the counterbore through the leg and into the mortise.

Now fit the front rails into the leg mortises. Chuck that 3/8" bit into your hand drill and drill as deeply as you can through the leg and into the rail. The hole in the leg will guide the bit as it cuts into the rail. Then remove the leg and drill the 3/8" hole even deeper. You probably will have to use an extra-long drill bit for this.

OK, here's the critical part. Now you need to cut two small mortises on each rail. These

mortises will hold a nut and a washer and must intersect the 3/8" holes you just drilled. With the leg and rail assembled, carefully figure out where the mortises need to go. Drill the mortises in the rails as shown in the photo. Now test your assembly. Thread the joint with the bolt, two washers and a nut. Use a ratchet and wrench to pull everything tight. If your bench ever wobbles in your lifetime, it's probably going to be a simple matter of tightening these bolts to fix the problem. Remember to tell this to your children.

Base Assembly

This bench has a good-sized shelf between the front rails. Cut the ledgers and slats from your scrap. Also cut the two cleats that attach the top to the base. Now sand everything before assembly — up to 150 grit should be fine.

Begin assembly by gluing up the two end assemblies. Put glue in the mortises and clamp up the ends until dry. Then, for extra strength, peg the tenons using 3/8"-thick dowel. I had some lying around. If you don't, buy the dowel at the hardware store and add \$1 to your bottom line.

Screw the ledgers to the front rails. Make sure they don't cover the mortises for the bed bolts, or you are going to be in trouble. Now bolt the front rails to the two ends (no glue necessary). Rub a little Vaseline or grease on the threads first because after your

bench is together you want to seal up those mortises with hot-melt glue. The Vaseline will ensure your bolts will turn for years to come.

Screw the cleats to the top of the upper side rails. Then drill oval-shaped holes in the cleats that will allow you to screw the top to the base. Now screw the seven slats to the ledgers.

Finishing the Top

Before you attach your top, it's best to drill your dog holes and attach the vise. Lay out the location of the two rows of dog holes using the diagram. I made a simple jig to guide a $\frac{3}{4}$ " auger bit in a brace and bit. The jig is shown in action in the photo above.

Now position your vise on the underside of the top and attach it with the bolts provided by the manufacturer. This Czech-made vise is of surprising quality, with a heavy-duty Acme-thread screw. The only downside to the vise is you are going to have to make your own wooden face. I must confess I didn't have enough wood left over from my 2 x 8s to make the face. So I made it from a small piece of scrap from another project. You'll need to drill three holes in the wooden face so it fits over the bars, but this is pretty self-evident when you pull the vise out of the box. All the European benches I've seen have a bead cut on the edges. I'm not one to argue with tradition, so I used a beading bit

in a router table to cut beads on mine, too.

Make the vise's handle from a length of 1"-diameter oak dowel. My handle is 20" long, which is just the right length to miss whacking me in the head at every turn. I'm a tall guy, so you might want to make yours a bit shorter.

You are now almost done. It's necessary to flatten the top. Use "winding sticks" to determine if your top is flat.

Winding sticks are simply identical, straight lengths of hardwood. Put one on one end of the top and the other on the far end. Now crouch down so your eye is even with the sticks. If your top is flat, the sticks will line up perfectly. If not, you'll quickly see where you need work. Use a jack plane to flatten the high spots. Then sand your top and rag on a couple coats of an oil/varnish blend on the base and top.

With the bench complete, I was pleased with the price and the time it took, which was about 30 hours. However, I'm now itching to build a cabinet beneath the bench and to add a leg jack for planing the edges of long boards. Maybe I'll get to that next issue, or maybe I'll let a future granddaughter take care of those details.**PW**

Chris Schwarz is a Senior Editor for Popular Woodworking.

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'Welcome Friends' Plate

This simple scrollsawn collector's plate will charm visitors to your home, and the design is simple enough that you can make a few of them in a weekend. The plate consists of two pieces that are sawn and then glued on top of one another to create the 3D effect. Choose two contrasting woods for the different layers. I used ¼" mahogany for the top layer and ¼" birch for the bottom layer, though any tight-grained hardwood will do. After you've picked out your wood, sand it to 220 grit. Make two copies of the drawing at right. Cut one pattern for the interior plate design and one for the rim design. Attach them to your wood with rubber cement or a spray adhesive.

Use a small drill bit to bore access holes for all your inside cuts, then make your cuts with your scroll saw. Clean up any rough edges with sandpaper. Glue the two pieces together using the registration marks on the drawing and finish your plate with two coats of a clear finish.

You can hang your plate on the wall or purchase a plate holder to display it on a mantle or a sideboard. Order a wooden plate holder (not the one shown above) for \$1.95 plus shipping by calling the Berry Basket and asking for item# P550. **PW**

Rick Longabaugh is a professional woodworker who runs www.berrybasket.com.

com.

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Shaker Bench

Four boards and a little space along a wall is all you need for this bench.

With nothing more than wedged tenons and some good engineering, this is a phenomenally strong bench. The wedged tenons create a splayed dovetail effect that completely locks this bench together. I built this bench using only The Little Shop Mark II, a workshop on wheels that uses only \$1,000 in tools.

Begin construction by cutting out the four boards according to the Cutting List. The extra length on the stretcher and legs is to accommodate a little extra length on the tenons for trimming.

After cutting and cleaning up the tenons, lay out and cut the through-mortises, which are angled to accommodate the wedged tenons. Cut the mortises to fit right over the tenons. To lay out the arc on the stretcher, drive a nail into the top of the arc at the center of the board. Then drive a nail into the starting point of both ends of the arc, as close to the edge of the board as possible. Take a strip of wood approximately 1/8" x 1/2" x 36" and bend it into an arc between the nails and trace a line on the stretcher. Remove the nails, cut out the arc and clean up the edge with a drawknife.

Now make the cutouts in the end panels. Lay them out according to the diagram, then cut them out



1 Glue up Your Panels Taking some lumber from a friend's cherry tree, cut down, milled and air dried. I glued up two boards to make the top and ends for this bench. Some scraping of the joint is required after gluing. Try to arrange your boards so the joint between them is invisible.



2 Cutting Tenons Cut the tenons to the actual width on the table saw. Set the blade to 1" high, defining the length of the tenons. After marking the depth with a gauge, cut the waste out from between the tenons. Set the saw to 7/8" high for cutting the slots that accept the wedges used to hold the table together. See the diagram for the actual size of the outer parts of the tenon. Use a backing board on your miter gauge to hold the boards upright.



3 Routing a Shoulder Next, set up the router table with a 1/4" straight bit to clean up the shoulders of the tenons. Mark on the router table fence where you need to stop and start each cut and gently push the tenon ends of the boards

with a coping saw. Make some relief cuts into the waste side to make cutting it out a little easier.

Once you have all the joinery fit, it's time to get ready to assemble the bench. This is a completely clamp-free glue up. The wedges driven into the tenons act as the "clamps" to hold the entire bench together. The wedges are cut at an angle wider than the 5° of the mortise because the wedge itself becomes compressed when driving into the tenon. This compression takes away some of the wedges' ability to spread the tenon. That's why you make wedges with a 7° taper. This yields a good spread on the tenon during assembly.

Now is the time to test a set of wedges in a joint. Using no glue, assemble a joint. Tap in a couple of wedges and see if they completely spread a joint apart before bottoming out in the tenon slot. If they leave a little room, cut a little off of the wedge's narrow end and taper it to fit the top of the slot accordingly. This gives a little more play to spread the tenon apart. Gently disassemble the dry-fit joint and proceed to glue up the bench and drive home the wedges with glue on them. It helps to wait a bit to clean up the squeezed-out glue. This lets it get a "skin" that keeps the mess to a minimum. Clean up with a chisel and a damp rag.

After cutting the tenon a little proud, mask off the tenon for sanding by taping around the

against the bit, missing the tenon.



4 Tapered Mortises When you can press fit everything together, make a simple angle gauge to cut the 5° angle on the narrow widths of the mortises. The 5° angle widens the top of the mortise by about 1/8". Split this measurement and mark both sides of the mortise, with a 1/16" offset, for setting the angle gauge. Before chiseling the angle, take a small saw and cut the sides of the mortises to the marks, reducing tearout. Clamp the gauge in place and gently chisel out the angle on the mortise sides. The angle shouldn't go completely to the other side of the mortise. This leaves a softer bend for the tenon to make (see diagram), thereby reducing cracking — something you have to be careful about in a brittle wood such as cherry.



5 Wedges The wedges are cut on the table saw using a simple jig (see diagram below). The stock is 3/4" x 6" x 3". That means the grain direction is in the 3" dimension. Make a simple jig to hold the wedge stock while cutting on the saw.

entire tenon with two widths of masking tape. The tape keeps you from sanding a depression in the top around the tenon. Chisel and plane an angle on all four sides of the tenons and round them over with a sander.

Remove the tape and sand the rest of the bench to 150 grit. Apply three coats of clear finish and rub out your finish with some steel wool and wool wax, a lubricant you can find at many woodworking stores. PW

Jim Stuard is a former associate editor for Popular Woodworking.



6 Trimming Tenons When the glue is dry and cleaned up, make a template out of the cover from a steno pad. The front and back will do. Just tape them together and cut out a couple of holes for the tenons to come through. The more difficult set of tenons to reach are the ones below the top. Set your template up for those. Lay the template over the tenons and cut them flush with the template.

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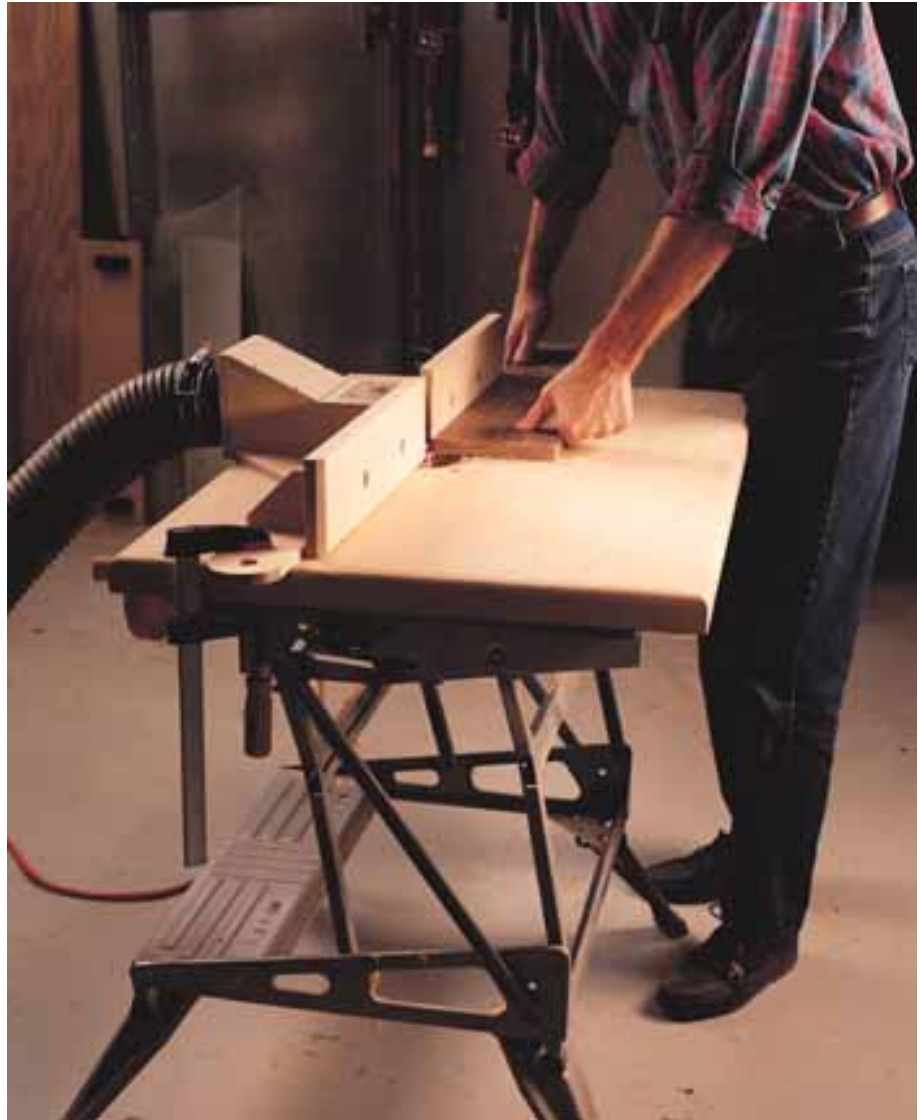
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Router Table-Mate

Everything you'd want in a router table for just \$50.

Commercially made router tables are everywhere these days. Some of them come with more gizmos and gadgets than a '59 Edsel. By the time you tally up all the add-ons, the price approaches a medium-duty shaper. Here's my short list of "must-have" features for a good router table:

- A table the size of a carrier deck.
- Compact design so it can store easily.
- A stout fence that's long and easy to adjust.
- Easy bit-height adjustment with no stooping.
- Great dust collection.
- A \$50 price tag.

With all these features in mind, I hit on the idea of using my folded-up Workmate stored under the stairs. Can't I just make a top for it? Then I remembered the great idea from Contributing Editor Nick Engler in our January 2000 issue. Nick made the top of his router table tilt up for easy adjustments. Bingo. Now my Workmate/router table goes right back under the stairs and takes up only another 1½" of space, the thickness of the router tabletop. You can also use this



1 A larger base for the router was the ticket for bridging the open areas left by routing out the plywood for the router's base. It was later used as a small circle cutting jig for the tabletop and plastic inserts. Use the same cutter and it's easy to keep track of dimensions for cutting inside or outside circles.



2 Another illustration of the first photo.



3 Once the tabletop is hinged to the Workmate's front board, it's easy to locate the the positions for the prop stick and stick bracket. Note the shop-made replacement board for the Workmate top.

router table without a Workmate. A simple pair of sawhorses will suffice.

Customizing Your Table

While the fence is generic to any router table setup, the table needs to be customized for your needs. You may have a different brand router than mine, so you will have to relieve the underside of the table to accommodate the shape of your tool. You'll have to locate the mounting holes for the base to suit your router. You may prefer a different table height. If you are below average height, you'll want to make the angle at which the table props up less steeply.

The top is made from two pieces of $\frac{3}{4}$ " birch plywood that are glued together and banded with $\frac{3}{4}$ "-thick solid birch. Before gluing anything together, it's best to work on the top plywood piece. Since you must rout out the underside of this top piece where the router base will be mounted, do it before gluing the two sheets together. The hole in the bottom sheet can be simply cut with a jigsaw. First, lay out where you want your router base to be mounted and find the exact center of the base. I put the centerpoint on my table 8" in from the back edge and centered right to left. So once the point is established, drill a $\frac{1}{16}$ " hole straight through to the other side. You'll need this location for work later on.

Now set up a router with a circle-



4 As you assemble the fence, make sure it is square along its length. Be sure and check it again after it is clamped up.



5 Inside view of the dust chute from the rear including the plastic 4" to 3" dust collection hose adapter. Rout the 3" hole for the adapter with the circle-cutting jig or use a "fly cutter" in your drill press.



6 Break in your router table by milling the slots in the fence subfront that will allow the fence faces to adjust into or away from the router bit. Lay out the stop/start lines and plunge cut the slots.



cutting jig and a ½" straight bit. Set the bit so it will cut to a depth that will leave a 3/8" thickness in the plywood top. Cut a circle (assuming your router has a round base) on the underside of the top that is approximately ¼" larger in diameter than the router base. Place the circle jig's indexing pin in the center hole you just drilled. Rout the circle and the remaining waste inside the circle.

Next, turn the plywood piece over. Use your center hole and circle jig to cut a 1/8"-deep circular rabbet or ledge for your plastic inserts to fit into. The insert diameter is 4-¾". But before you use this insert size, check the size of your router's base. You may need to make a smaller-diameter insert based on the size of your router base. The router I mounted in the table is a massive Porter-Cable 7518. I made the insert hole size large enough to accommodate the largest diameter router bits.

Now make the hole the router bits pass through. Leave a ledge about ½" wide all around for the removable inserts to rest on.

Now take the second sheet of plywood and jigsaw the cut to accommodate the router base. Also, make any cuts necessary to allow for your router base's handles. When done, glue the two sheets together. Keep the edges flush.

When the glue is dry, trim the top to finished size on the table saw.

7 Attach the fence faces using 3/8" roundhead machine screws, a star washer, flat washer and wing nut. I tried using hex-head bolts but switched to screws because a screwdriver can be used and makes a more secure attachment with less trouble.

Now prepare some stock for the solid-edge banding. Miter the corners and glue it on. Make sure it is flush to the top. When dry, sand everything flush, then rout a roundover profile on the top edge.

Tabletop Inserts

Make the round tabletop inserts from 1/8" acrylic. I made three inserts to cover most of the router bit sizes I'd encounter. First set the circle jig to cut a circle that is the same size as the insert hole. Set your router to make an outside cut instead of an inside cut. To rout the acrylic, just drill a hole to accommodate the circle-cutting jig's pin or nail.

The three hole sizes I made in the inserts were 1", 1-3/4" and 2-3/4". The smaller holes were drilled using hole saws but the larger size required the circle-cutting jig.

Complete the Top

To fasten the inserts to the table, install three threaded inserts in the rabbet. I used inserts for a 6/32 flush machine screw. Once installed, transfer their locations to the acrylic inserts, then drill and countersink the plastic.

Next make a new piece to replace the rear board on the Workmate's table. The homemade board is narrower and allows the router to swing up unencumbered. Cut the board to the dimensions given in the

materials list and locate holes that match those in your existing Workmate. The new board is slightly shorter than the original. Install the Workmate connecting hardware and place the board in the furthest connecting hole of the Workmate.

On the underside of the router tabletop you'll need to install a piece of $\frac{1}{2}$ " material where the stick that supports the top in the open position locks in place. I used a $\frac{3}{4}$ " dowel for a prop stick and drilled an oversized hole on a 25° angle in the block to nest it.

As mentioned earlier, the length of the prop stick will depend on how tall you are. On the end of the stick opposite the 25° angle, drill two holes that intersect each other to allow the stick to pivot in two directions, side to side so that it can be lowered when not in use and angled to allow you to tip it forward when propping the tabletop. Use a stout wood screw, a #10 or #12, to connect the prop stick to the edge of the new shop-made top board.

Next use a pair of hinges to connect the top to the Workmate's front board. Locate them about 4" in from each end.

Now Make the Fence

Keep in mind the most important factor in making the fence is that it is straight and square to the table. It could be shimmed later, but you'll be fussing with it forever.

Start by laying out the full size shape of the bottom piece on the material you will actually use. Be sure you have a true, straight edge for what will be the front.

Go ahead and lay out where the dados will be cut, including where the half-round throat opening for the router will be. It's best to do the layout by first establishing the center of the length of the fence and working out from there. When done, cut the back shape. It need not be pretty.

Next cut out the two subfronts for the fence. Install your dado blade on the table saw to cut the thickness of the Baltic birch.

Now set the dado blades to make a 1/8"-deep cut. While holding the front edge of the fence bottom against the slot miter gauge, cut the six dados, following the layout lines already marked. When done, cut the center dado on the subfronts making sure it locates precisely where the dado in the bottom falls. Next raise the dado set to cut 3/8" deep and run the rabbets on the ends and bottom of the fence subfronts.

Remove the dado and cut the fence ribs and pieces that make up the dust collection chute. Use the diagram for the shape. Before assembling the fence, cut the half circle in the fence bottom for the throat opening, then use a rasp to slope the back edge for more efficient dust evacuation.

Assemble the Fence

Be careful when you assemble the fence to make sure it goes together square. First dry-fit all the parts to be sure you have a good fit. Then glue the ribs and dust chute sides to the bottom, making sure all the edges are flush to the front edge. If you have a brad nailer, set these in place with a couple short brads. Glue the fence subfronts to the bottom and ribs. Clamp front to back until the glue dries.

Now cut the three remaining dust chute parts: the top, angled top and back. Cut a half circle in the top similar to the one in the fence bottom. After the glue in the fence assembly has dried, glue the dust chute top in place. Afterwards, install the angled top and the back piece. The angled top requires a steep angle cut on the lower edge to seat down to the flat top. I cut this angle on my band saw. The back of the chute requires a hole for dust collection. The chute is set up to take a 3" hose or a fitting that reduces a 4" hose to a 3" hose. I used a "fly cutter" in my drill press to make the 3" hole. To complete the assembly of the dust chute, screw the angled top, then the back in place.

Use Your New Router Table

Now use your router table to mill the slots in the fence's subfronts that allow the fence fronts to slide left to right.

Set your router in the table with a

3/8" straight bit. Make a temporary fence from a straight piece of scrap and clamp it to the tabletop. Use the fence diagram for setting the distance. Cut the 2"-long slots in the center of the openings between the ribs.

Make the adjustable fronts from a tight-grained hardwood such as maple. Be sure the material is flat and straight. Cut the two pieces to the lengths given. Make bevel cuts on the ends as shown in the diagram. Carefully locate the hole locations where the 3/8" machine screws attach the fronts through the slots in the subfronts. Drill and countersink the holes. For attachment, I used the screws along with star washers, flat washers and wing nuts.

The last detail is to cut a small piece of acrylic as a "window" on the top of the dust chute into the router opening area below. PW

Steve Shanesy is Editor for Popular Woodworking.

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European Telephone Console

Keep your phone, phone books, keys and other small items in order.

Being worldly woodworkers, the *Popular Woodworking* staff spends time checking out woodworking ideas from Britain, Australia and even Germany. It was in a German woodworking magazine called *Selbst* that we saw a similar entry hall stand. Its clean lines and utilitarian efficiency caught our eye, so we decided to give it a little American schooling and share it with our readers.

Two Triangles

I was able to get all the necessary parts (except the back) out of a 4' x 4' piece of cherry plywood. Start construction by ripping two 12½"-wide pieces from the sheet of plywood, then crosscut the pieces to 38" long. Next, strike a pencil line from one corner, 12" from what will be the back edge, and connect it to a point on the opposite corner, 1½" from the same back edge. Mark both pieces, making sure you have left- and right-facing pieces.

Head to the band saw with the two pieces and cut along the pencil line, leaving about an 1/8" wide of the line. Then take the two pieces to the jointer and trim the angled edge straight and fairly close (1/16") to the line. To make the two pieces identical, clamp them together, flushing up the back and top edges. Using a



1 These first six photos show the sidebar "Iron-on Wood" below. Start with a piece of tape that's about 2" longer than the edge you are covering. Your iron should be on a cotton setting, with the steam turned off. Make sure the tape overhangs the edge evenly, then start ironing. Make long passes over the edge, not stopping in any one place for any length of time, applying heat evenly. The tape will start to curl up a little as the glue melts.



2 Since trying to use the iron to hold the tape in place as the glue dries just re-heats the glue, switch to a simple block of wood. The chunk of poplar shown here works great. The bottom surface is sanded smooth and the edges are broken to avoid snagging or scratching. Simply apply pressure and make long passes over the edge for about 30 seconds. If you have a few pieces to veneer, set the first piece aside for now to let the glue cool.



3 To trim the edge, start by carefully bending over the ends until the

sharp bench plane I made a few passes on the angled edge to even up the pieces.

Parts for the Middle

Grab what's left of your plywood sheet and rip an 11"-wide strip from it. From this 11" x 48"-long piece you'll be able to get the door, the kick, the two cleats and the shelf. Crosscut all the pieces except the shelf to size. The piece that is left is enough to make the shelf, but I turned the shelf so the grain would run longways to better match the veneer tape. Go ahead and cut the shelf to size now.

Now it's time to disguise the plywood as solid wood. The front and top edges of both sides receive iron-on veneer tape, as well as the front edge of the shelf, the top edge of the kick and the top edge of the lower cleat. Don't tape the door edges until the case is assembled. If it's your first time using veneer tape, see the instructions on the next page.

Put it All Together

There are a couple of joinery methods you could use to join the pieces together, but I chose biscuits. Start by marking the location of the shelf on the two sides and cut those biscuit slots. Then mark the location of the upper cleat to biscuit it to the underside of the shelf and into the two sides. The lower cleat is biscuited flush to the back edge and bottom of the sides, while

veneer breaks. Make sure you apply pressure to the end of the attached veneer so it doesn't splinter back onto the visible edge. Then pull the "dangling chad" of veneer downward to tear it free. By the way, if you're doing four edges of a board, do two opposite edges first, trim the edges, then apply the other two edges.



4 To trim the long edges of the veneer tape, the tool of choice is a mill bastard file. Start by flushing the ends you just broke over, keeping the file flat to the side, and using only a pushing stroke. It should only take a couple strokes to flush up the end.



5 To trim the tape edges, use the file again, working right to left against the edge. The best method is to start the file at the end of the tape and push lightly against the overhanging edge to start a curl of veneer breaking away from the edge. Continue rolling the curl along the piece, keeping the file angled forward and at a slight bevel to the veneer tape. Once the curl is knocked off, lightly file the bevel again to remove any excess.

the front kick is flush to the bottom edge, but held in 1/8" from the front edge to add shadow lines and to keep you from having to align the door perfectly with the edge of the cabinet. With all the biscuit slots cut, sand the inside faces, add some glue and clamp the piece together. Though there's little chance of the piece racking, check it for square.

After the glue is dry, remove the clamps and roll the piece onto its face. Chuck a rabbeting bit into a router and cut a 3/8" x 3/8" rabbet in the back edge of the sides and in the top and bottom cleat. Cut a 1/4" back to fit the space and round the corners to let it drop into place. Don't put the back in yet as it's easier to finish and mount the door hardware with the back off. Go ahead and fit the door, then veneer all four edges.

Finishing Touches: A Clear Top and the Right Hardware

The door is held in place using a continuous hinge mounted to the kick. You should be able to catch six holes in the hinge. Start by mounting the hinge to the kick, then use the two center holes to attach the door. Check to see if the hinge location allows proper clearance. If not, back out your first two screws and use two other holes to scooch the door one way or the other. When you've got it right, plug the misaligned hinge holes with a toothpick and some glue, then redrill the pilot hole and put the



6 The file is too aggressive for a finished edge, so trade it in for some 220-grit sandpaper and finish cleaning up the edge. You'll find some of the adhesive is stuck to the face of the board. This can be lightly sanded off, but proceed carefully to avoid sanding through the face veneer. That's all there is to it, but don't go using the clothes iron, buy your own for the shop!



7 With all the cross members cut, the biscuit joiner makes it possible to pull the project together. This photo also shows the two cleats in place at the top and bottom of the case.



8 Once the two side wedges are cut to rough size, trim them a little closer to accurate on the jointer. Once you're within about 1/16" of the finished line, clamp the boards together and get out a bench plane. With a little hand work the pieces will match up perfectly.

screws back in. The door is held in place using a brass lid support and a magnetic catch.

The clear acrylic top is the last construction step, and it's fairly easy to install. Simply drill four shelf pin holes in the sides to allow a 3/8"-thick piece of acrylic to rest 1/16" below the top edge. The acrylic piece is available as a 12" x 12" piece from a number of catalogs as a router-table insert. Cut the piece close to finished size on the table saw, then sand the piece to a press fit a little at a time. To make the two visible edges presentable, file the edges flat, then sand through 360 grit to a near-perfect edge.

Two coats of clear finish will protect the wood, and the piece is ready to hang. The upper cleat works great as a mounting point using a couple of molleys in the wall. Add a few simple cup hooks to the backside of the door, and you've got a convenient place to hang keys, phone books or any other "near-the-door" items. PW

Sidebar: Iron-On Wood see first six photos

There are lots of reasons to use plywood in a project. Cost, weight, wood movement and even environmental considerations. But just because you aren't using solid wood, you don't need to give up the look of solid wood. Iron-on veneer tape has been around for a long while, but it has sort of a "cheap" reputation. I'm here to tell you it's worth a look.

Available in a wide variety of wood species, veneer tape is actual wood veneer with a heat-sensitive adhesive applied to the back. With the heat of a simple household iron and a few simple tools you can turn a piece of plywood into a finished and attractive piece of wood.

I've been asked about the durability of veneer tape. I can't honestly think of any application for solid wood where tape wouldn't hold up as well.

Follow the steps below for some tips to getting the best results from your veneer tape.

David Thiel is a Senior Editor for Popular Woodworking.

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All-weather Morris Chair

Build a Morris chair that you can keep outside.

A Morris chair is a great place to settle in and do lots of things, including reading a book, enjoying a drink, chatting with friends and watching a good rain storm. During at least half of the year in the Midwest these things are nice to do outside, as well as inside, but dragging a white oak mortise-and-tenoned Morris chair onto your deck isn't the easiest thing. Not one to be put out of a comfortable position, I decided painted pine could work for a Morris chair as well, and so I headed for the home center store.

The chair is made entirely from 1 x 4 and 1 x 6 pine, about \$40 worth. The hardest joint on this chair is a butt joint, and if you've got a jigsaw, drill and a hammer you can knock one out in a day. With the help of a couple extra tools, my personal best time is under four hours. Your hardest work will be picking through the lumber racks to find the straightest and most knot-free lumber from the store.

The chair is designed to have a cushion, but you don't have to add one. If you don't use a cushion, the chair may feel a little deep when you sit in it. Because of this, I'd suggest taking 2" off the lengths for the side rails, arms, seat slats and side cleats. Readjust the spacing of the side slats to fit the shorter seat. My cushions came from a home center store and were modified with a little sewing. You also can



1 With the legs assembled, attach both lower side stretchers. Then place an upper stretcher in position and draw a line from the top of the angle on the back leg to the front leg. Cut the stretcher on the mark, then attach the upper stretchers, completing the two side frames.



2 Simply screw the front and rear stretcher between the side frames and it starts to look like a chair.



3 The side slats are mounted flush to the bottom of the lower side rail and cut to match the angle of the top rail. Simply hold the piece in place, make a mark, and choose your toothed tool of choice to make the cut.

check out [Summer Living Direct](#) and buy their “Winston cushions” (items # W1917 and W1907).

Start your building by cutting out the pieces to form the front and rear legs. Traditional Morris chairs typically have very stout legs, and I didn’t want to lose that look or stability, so I edge-glued and nailed two pieces together to form a “T.” Face-on or from the side, the sturdy leg is still visible. With the legs formed, the rear (shorter) legs need to have the top end cut at a 5° angle from front to back. Remember that the back on these legs is the top of the “T.” A miter box made quick work of this step.

The next step is to get your box of 1-¼" deck screws (available at [McFeely's](#)) out and attach the lower stretchers to the inside of the legs with the top edge 8" off the floor. With those attached, slip the top stretchers into place, flush with the front leg, and mark and cut the bevel on the rail to allow the arms of the chair to slope back. Then screw these stretchers in place, also on the inside of the legs and then screw the front and rear stretchers in place, above the lower side stretchers. With the side frames complete, cut the pieces for the side slats using the sides themselves to determine the angle to cut on the top of the slats. I spaced them evenly and used a pneumatic brad nailer to attach the slats as they’re more decorative than structural.



4 The arms are cut to the front and rear lengths at a 2-½ degree angle and then the front piece is flipped upside down. This gives you a 5 degree angle at the joint. While the inner part of the arm is well supported by the legs and stretchers, the outer part of the arm needs some extra support. With a little variation on the Arts & Crafts exposed joinery theme, I used an exposed biscuit, cutting the biscuit slot at the mating point of the arm, then inserting the biscuit and later cutting and sanding it flush.



5 As you can see on the end, the back stiles are glued together to form “L”-shaped sides, then the back rails are screwed in place between the two sides. The 1-½" rail is attached to the upper rail to make a more solid looking and feeling back.



6 With the back slats in place, the ends of the back stiles need to be beveled to allow the back to recline to a comfortable position. I’m beveling the pieces here with a pull saw at more of an angle than necessary, but it won’t hurt anything.

The two arms are cut from 37"-long pieces. Measure 4-½" in from the front edge of each, then crosscut the pieces at this point at a 2-½ degree angle. By flipping over the shorter piece, a 5 degree angle is formed, and the arms can be attached to the legs and top rails. Cut the taper shown in the diagrams on the back of the arms to add a little more grace to the piece, then center the arms on the front legs and attach. I used screws here, because I knew in my heart that I'd be dragging the chairs around by the arms. I was right. The extra strength is a good move.



7 The completed back is screwed in place against the back seat rail with a continuous hinge. You can also see the three holes in each arm that the back support (shown on the right-hand arm) drops into.

The seat of the chair is formed by simply adding nailing cleats to the inside of the chair frame. Screw the rear cleat in place with the bottom edge flush to the bottom of the rear seat stretcher. Then lay a straightedge on the rear cleat, stretching across the front stretcher of the chair. This is the angle the seat will take. Mount the front cleat to the front stretcher so that it fits under the straightedge. The two side cleats are mounted following the angle of the straightedge. Mounting the seat slats is simple from here. Cut the slats and use a router to round over at least the front edges of the boards. If you like, go ahead and round over the long edges as well. Then simply lay the two outside slats tight against the sides and back and nail them in place. Put the center slat in place next, then fill in with the four thinner slats, spacing them evenly.

The back is constructed by forming L-shaped sides, screwing a top and bottom rail between them, then nailing the slats evenly spaced across the back. To allow the back to fold both forward and back, the continuous hinge needs to be mounted to the inside of the back chair rail and to the outside of the lower back rail. Mounted this way, the two back stiles will keep the back from reclining. To solve this I cut a bevel on the back stiles using a hand saw. Mount the back and fold it forward for now.

Next, mark the 5/8" hole locations on the arms and drill the holes using a spade bit. To avoid tear-out, drill through the top of the arm until the tip of the bit pokes through the bottom of the arm, then drill the rest of the hole from the underside of the arm.

To make the chair an adjustable recliner, cut a back support bar as shown in the cutting list and cut a chamfer along one edge. Then mark the bar to match the holes in the arms and drill two 1/2" holes through the piece. Put a little glue on the two 2"-long sections of dowel and insert them into the holes until they are flush with the top edge of the piece. The glue should hold, but to add a little extra strength I shot a brad nail through the back of the piece into each dowel.

It's not a decent Morris chair unless it has a foot rest. This one is fairly simple, with the four legs

again using the strength formed by an L-shaped glue-up. Four stretchers screwed between give the footstool its shape, and cleats and some evenly spaced slats finish the job. Again, this is designed for a cushion, so if you aren't using a cushion, adjust your dimensions and mount the slats to the top of the stretchers.

You're ready to finish. Do a little sanding to knock off the sharp edges and make a nice surface on the arms. The best outdoor finish is one that blocks light and seals the wood. Around my neighborhood that's paint. I picked a nice kelly green and used about seven cans of spray paint.

You may have noticed the reference to my "best time" at the beginning of this story. Since building the first of these chairs I've built a second for myself, and there have been orders pouring in from family and neighbors. So why don't some of you take these plans and start up a side business. Please, take some pressure off me! **PW**

David Thiel is a senior editor for Popular Woodworking.

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Rough Lumber Cut-off Stand

Here's a fixture that makes cutting rough lumber to length a snap.

Most garage woodworkers put their rough lumber across a couple sawhorses and crosscut it to length using a circular saw or jigsaw. After the cut, something usually falls to the floor – missing your foot if you're lucky. After some thought, we designed and built this cut-off stand to improve the life of the garage woodworker.

Adjustable in height to accommodate almost any cutting location, this stand works with two sawhorses (or your bench or table saw) to keep your lumber fully supported during a cut.

But that's not all this stand does (our philosophy is if it's going to take up space in a garage shop, it better have more than one use). So we added a removable roller stand to the top that turns the fixture into an adjustable outfeed stand for most of your woodworking machines.

The stand is remarkably simple to build. Make the lower support using $\frac{3}{4}$ "-thick hardwood of your choice that's glued and screwed together using butt joints. The slotted post supporting the top section is formed by cutting, then regluing the pieces – no complicated router work. The top is $\frac{1}{2}$ "-thick Baltic birch plywood pieces nailed together to form a torsion box for extra strength.

From the Bottom Up



1 To form the post, the rough piece is ripped into three pieces, the center piece is cut to form two small blocks, and then the whole thing is glued back together.



2 As you glue up the column, use the post to check the spacing. The post should slip easily into the sleeved column. You want the post to move easily, but don't make it too loose or you'll make the stand wobbly.



3 The feet are attached to the column with flat-head screws. Watch the screw alignment or you'll drill into another screw.

To make the stand easily adjustable in height, I chose a post-in-sleeve design. Start with the post. The finished size of the post is given in the materials list, but start with a length of wood that is $\frac{1}{4}$ " wider, thicker and longer than the finished size. This leaves room for saw cuts to form the slotted post and fitting room for overall size.

Next, take a look at the square $\frac{1}{4}$ "-20 nut you have for the locking hardware. Measure the width across the nut and add a fraction of an inch to that dimension. This will be the gap that you want to leave in the center of the post. The square nut will need to move freely up and down the gap, but not turn in the space.

Form the post by ripping the board into three lengths, with the two outer pieces being equal in width, and the center piece being the same width as the nut. Then crosscut the narrow piece into two $1\text{-}\frac{3}{4}$ "-long pieces. Glue those between the long outer sections and your post is almost complete.

Once the glue has dried, remove it from the clamps and run it through your planer to fine tune the thickness. Trim the post to length and move on to the sleeve.

The sleeve is formed by cutting the pieces to size, then simply gluing the four pieces together to form a rectangular column. Be careful to align the pieces to avoid cleanup and provide a square (and glue-free) center



4 Some simple hardware from your local home center store allows you to lock the post solidly, but quickly loosen the post and readjust for any height. The hardware is shown at right, resting on top of the column before being attached through the holes.



5 This shot shows the partially assembled table, with three exposed dividers and the other side covered with the top. You can also see the screws through the bottom that hold the mounting blocks in place. While the box itself is nailed together, the fence is attached with screws to allow for replacement if it gets cut up too much in use.

sleeve.

Lock-n-slide

The locking mechanism for the post is a length of threaded rod with nuts, a couple of fender washers and a handle slipped through the column. To make the clearance holes in the column, measure down 1-½" from the top on the front side and make a mark in the center of the column. Take the column to your drill press and, using a 5/16"-diameter drill bit, drill completely through both sides of the column.

Now switch to a 1-½"-diameter Forstner bit and, using the 5/16" hole on the back side as your center, drill a larger hole in the back.

The rest is hardware. Spin the two hex nuts onto the end of the threaded rod and use wrenches or pliers to tighten the nuts against one another to lock them in place. Then slip one fender washer on the long end of the rod and against the pair of hex nuts.

Now thread the square nut on after the washer and tighten it against the washer and hex nuts. Insert the assembly (long end first) into the larger hole in the back of the column, threading it into the center slot in the post (which you've slipped into place).

When the threaded rod pokes out the 5/16" hole on the front side, add another washer and the star handle. You're done. Make sure the square nut is

rotated to slip into the slot to make a tight fit.

Add the Feet

The last part of the base is the feet. These are just four boards screwed to the bottom of the column. I trimmed a long taper on the top of each to make it a little more aesthetically pleasing.

When you drill the clearance holes for the screws, pay attention to where the screws are located, or you'll end up drilling into another screw. Offset them slightly and you'll be fine.

With the feet attached, I added four adjustable leveler feet to make sure the stand would sit solidly on my uneven garage floor.

Torsion-box Top

I wanted to make the top of the stand as lightweight and strong as possible, but still stable. To accomplish this I used ½"-thick Baltic birch plywood and built an open-front torsion box.

Before making the box, locate the center position on the bottom plywood piece and mark where the top of the post will meet the box. Then screw two 1-¼" x 1-¾" x 5" solid-wood blocks to the underside of the plywood, centered and on either side of the post's location. Use these two mounting blocks to attach the table to the post after you have completed the table.

To form the box, simply

assemble it with a brad nailer, making sure to align all the edges to keep things square. The two tops are held flush to the outside ends, leaving a 3"-wide gap in the center to allow plenty of room for a circular saw or jigsaw blade. The space in "the valley" ends up at a 2-½" depth, which should allow clearance for almost any jigsaw blade and lots of room for the blade of a circular saw.

With the table frame complete, nail ½" x 2" x 4-½" backs into the spaces at the rear of the box, closing up the opening. The hardwood fence is next. Drill four clearance holes and screw the fence to the back of the box, screwing into the backs.

To avoid any concern of binding a saw blade during the first few uses, cut a notch in the fence 1" wide and as deep as the blade depth you're most likely to use.

You're now ready to attach the table to the base. Drill clearance holes in the center of the mounting blocks under the table, then screw the table to the post.

A Little Something Extra

The roller is really inexpensive, and is quick to put together and attach. Simply drill two ¼" clearance holes in the 1-1/8" x 2" x 9-½" roller block, 1-½" from each end, and centered on the block. Use a ½"-diameter drill bit to countersink the top of the holes to fit the head of a machine bolt and a locking washer. Then flip the block over and use a 1-½"

Forstner bit to countersink the bottom of the hole to accept a hex nut.

Before attaching the hardware, place the block in the table valley and use a pencil to mark the hole locations on the table bottom. Then drill oversized ¼" holes at those locations.

With the bolts inserted and tightened down, screw the roller mounting brackets in place on the block. The ends of the bolts will slide easily into the holes in the table, and the roller can then be attached using two wing nuts. When the roller isn't needed, it fits snugly inside any one of the open-end spaces in the table.

No matter where you use this stand, you'll find rough-cutting lumber a more pleasant experience. I'm pretty sure there are a few other uses for this stand as well. Just give me some time. **PW**

David Thiel is a senior editor at Popular Woodworking.

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Heirloom Photo Album

Your photos will be more memorable when bound in this custom-made album.

Given the current craze for scrapbooking, I thought it high time we woodworkers weigh in with our own version of what a memorable photo album should look like.

And if you are tempted to rip out these magazine pages before your spouse sees them and places an order for say, a dozen or so, fear not. This truly is an easy project. It could even be simpler than what you see here if you skip the resawing and bookmatching of the 1/4"-thick front and back covers.

In fact, if you were making five or six at a time, you could probably spend no more than a half hour on each one. Or, you could go in the other direction and make it more complicated with inlay or chip carving on the front.

There could, in fact, be many variations on this project. You could easily alter the size of the covers for smaller photo album sheets, you could set it up with blank pages for use as a personal journal, or documents from your family tree research.

No matter what direction your version of this project takes, two simple elements will make it all possible: the post binding screws that fix the covers and pages together, and the small-scale continuous hinge that allows the



Brass miniature continuous hinges are a cinch to cut with a pair of metal shears. Make your cut at the joint where two hinge leaves meet nearest your ideal length.



An ordinary paper hole punch enlarged the holes that were pre-punched by the manufacturer of the photo album sheets.

covers to open, making them truly functional. The hinges and post binding screws can be ordered through the Lee Valley woodworking catalog.

Getting Started

A trip to an art or office-supply store is the first step. Select the photo page size you want to work with. Some pages simply are plain sheets that are inserted in clear plastic sheet protectors. The protectors, in turn, are usually punched for use in a three-ring binder. The sheets I used were hole punched for post binding and "hinged," meaning each sheet was made to fold at a given place along the edge where it would be bound into the album.

I selected a sheet size that was 12" x 12". Next I ordered my post binding screws and hinge from Lee Valley. The screws, called "Chicago Bolts" in the catalog, come in various lengths, with each length allowing for a 1/4" adjustment. The brass hinge comes in a 3' length and is easily cut.

The page size and hinge gave me dimensions I could start to work with. The wood covers' finished size is 1/4" x 12-1/2" square. This allows 1/4" for the cover to overlap top and bottom. The bound side has 1/8" overlap, leaving 3/8" for the open side. When I cut the pieces I made the width 12-5/8". This allowed a table saw cut to separate the binding strip from the cover piece. The cover thickness was

¼", which is perfect for the hinge leaf.

A Word About Wood Choice

My album covers are made using feather-figured walnut that was resawn and bookmatched. It came from a tree in my neighborhood that was taken down and sawn into lumber about three years ago. Although it's been air drying all this time I was nervous as a cat about my pieces warping after resawing and glue up. Highly figured wood often has a mind of its own. I know that walnut is a relatively stable wood, like mahogany, but I kept my pieces on a flat surface with a weight on top until I was able to put a finish on them. Even at the thin ¼" dimension, I was lucky and both pieces have remained perfectly flat.

The point of all this is to remind you to be cautious about your wood selection and handling. Try to use a stable species. A narrower album would be less risky.

Hardware Installation and Finishing

I followed the hole patterns for the post binding screws that were already in the album sheets. Allowing for the top and bottom overhang, my hole center for the screws was 2-9/16" from the top and bottom. From the binding edge, I marked a hole center of ½".

The posts required a ¼" hole with a ½"-diameter counterbore to recess the flat heads of the

screws. I used a Forstner bit for drilling in my drill press. It is necessary to drill the front and back banding strip exactly alike.

At this point I progressively sanded to 220 grit, rounded the outside corners to a 3/16" radius, and heavily eased the edges, except for the edges where the hinge would be installed.

The finish may be a bit more complicated than you are accustomed to, but the fantastic figure in the walnut demanded as good a finish as I know how. And it was worth each step. Because walnut is an open-pore wood, I filled the grain using paste wood filler. I added oil-based walnut stain to the filler to color the filler and the wood. After applying the filler, I allowed it to dry for 24 hours.

For a clear top coat I used a lacquer that comes in an aerosol spray can. The product is the best lacquer in a can I've ever used. It's called Master's Magic and is available from The Woodturners Catalog. A can of sanding sealer and satin finish lacquer are required, and the product should be used only in a well-ventilated area free of open flames (including pilot lights on water heaters or furnaces) or potential sparks.

After applying the sanding sealer, carefully sand with 360-grit paper, being especially careful near the edges. The idea is to lightly sand down any dust particles or bubbles that may

have formed but not to sand into the stain color below the sealer. After sanding the sealer, spray two top coats with the satin finish. Allow the finish to cure overnight, even though it will be dry to the touch in 15 minutes.

I used a pair of snips to cut the hinges to 12-1/8" long. Cut the hinge at one of the leaf joints. The hinges are attached using flat-head brads that you should order along with the hinges. Predrill the holes for the brads into the edge of the wood leaving about 1/4" of the brad length not drilled. Predrilling should ensure nothing pokes through the face of the cover.

Insert the post part of the post binding screws and fill your photo page inserts. I found that it was necessary to slightly enlarge the holes in the sheets with an ordinary paper punch. When done, lay the other cover over the post and then insert the screw.

If you are considering leaving the album on a coffee tabletop, or if you just want to protect the back cover from scratches, put a felt bumper pad in each corner of the back cover.

As a photo album or scrap book, this project makes an extra special gift for an extra special occasion. Is there a family wedding in your future? **PW**

Steve Shanesy is editor and publisher at
Popular Woodworking

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Garage Golf Caddy

An easy-to-build storage solution for all the putters you know.

Although my shop keeps me busy, I still find time for hunting in the woods surrounding our home, fly fishing and lately, swinging some iron with one of my favorite golfing partners: my son, Josh.

Much like woodworking, as Josh and I have become more active in the sport of golf, our collection of golf-related paraphernalia has grown. Clubs, balls, tees and spikes began cluttering our family's garage and back hallway. (And you thought woodworking was expensive?) I decided a quick but sturdy cabinet would be the perfect garage storage solution.

This cabinet holds two golf bags with all our stuff at the ready for those days when the weather is perfect and cabinetmaking can wait. We just pull our truck forward a bit, load it up and head for the course.

This project is easy enough to build on a Saturday, ensuring ample time for the links on Sunday. Basically, the project works like this: The sides are dadoed to accept the top and bottom. The two adjustable shelves hang on pins between the two partitions. Everything else is assembled using nails and glue.

At first, I was a little concerned with how stable the cabinet



The 6"-radius half-circles on the top piece are simple to cut out with a jigsaw. Your golf bag will neatly nest in this opening.



Here I'm dry fitting the carcass of my garage golf caddy. Tight fitting dados will ensure a stable project. And before someone writes me a letter, let me just say that I know that sandals are not a good choice for woodworking footwear.



Place your partitions using the diagram then nail them in with a finish nailer. A little glue helps, too.

would be without a back. But as long as your dados are tight, I can assure you that your cabinet will be rock solid. The top back splash does an excellent job of adding rigidity to this open cabinet.

Selecting the perfect wood for a project is a lot like selecting the perfect iron to put a ball on the green. I chose oak for its durability, strength and relatively inexpensive cost.

Hitting the Fairway

First, cut all your parts to size according to the cut list. Make the miter cuts on the three pieces that make up the ball tray on the top.

Next, lay out your two 6"-radius half circles on the top piece, as shown in the diagram. These half circles cradle your golf bags. Your best bet is to use a piece of string attached to a pencil to lay out these curves. With the line marked on the top, cut the curve using your jigsaw.

Now cut the $\frac{3}{4}$ " x $\frac{1}{4}$ " dados in the sides to receive the top and bottom. Lay your dados out according to the diagram. You can either use a dado set in your table saw or a straight bit chucked into your router to make these cuts. Dry fit the top and bottom into your sides, making sure the fit is tight. As I said earlier, a tight fit will ensure a stable cabinet. No need to take a bogie here.

Once your dados are cut, lay out

the angles on your two sides according to the diagram. I cut these angles using my jigsaw, but a band saw will work, too.

Now it's time to drill the holes for the shelf pins so grab your drill and a 5mm drill bit. I use 5mm shelf supports instead of 1/4" shelf supports because the 5mm supports require smaller holes that don't stand out as much. You can purchase these supports at most woodworking stores or from catalogs. [Woodcraft Supply](#), [Lee Valley Tools](#) and [Woodworker's Supply](#) are all good sources for this item. Don't forget that you'll also need a metric drill bit, which is also easy to find in most catalogs these days.

The holes are spaced 2" apart. Drill 12 sets of 5 mm holes on the inside face of each partition for maximum shelving flexibility.

Nearing the Bar

Before I assemble anything, I like to sand my projects to 180 grit. Sanding now will be much easier than waiting to sand after the project is put together.

First, assemble the top and bottom to one of the sides. Then add the other side. Next, using a finish nailer and glue, add the two partitions. Now add the splash. You could pocket screw the splash to the backside but I stuck with my nailer and glue and it's held up to abuse just fine.

Next comes the mitered tray pieces. Again, I just used my

brad nailer and glue to assemble these. Attach the tray to the top using glue and a couple brads from underneath the top. Finally, place your adjustable shelves in between the two partitions.

Once everything is assembled and dry, sand all your front edges and then spray the entire piece with a couple clear coats of lacquer or whatever finish you are most comfortable with.

Now it's time to hit the pro shop and fill all the shelf space you've just created. **PW**

Troy Sexton is a contributing editor for
Popular Woodworking

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A Contemporary Mobile File Cabinet

An elegant design that provides no-nonsense functionality.

A few years ago I built some office furniture for a local internet consulting company, and recently they called me back: Not only had they survived the dot-com crash, but they needed some mobile file cabinets. I had already developed a unique look for their computer workstations: birch surfaces surrounded by rounded-over solid cherry edge-banding. The style was crisp, clean and a nice fit for the company's bright and airy office.

My clients had a few ideas in mind: They planned to move the cabinets around so that people could share files, and they wanted to wheel the cabinets underneath their desks to be easily accessible without occupying extra floor space. Locking casters and the ability to hold letter-size hanging file folders would also be nice. These guidelines created a set of dimensions to work from, and the fact that these cabinets are mobile also dictated that they be finished on all sides so that they could be enjoyed from all angles.

In terms of materials, we ruled out solid-wood panels because of their inevitable cross-grain expansion and contraction, and



During the second stage of cabinet assembly, laying the cabinet on its side keeps you from fighting with gravity. The cabinet comes together relatively easily, and the alignment is a snap thanks to the biscuits.



Go slowly while rounding over the edges, as the cherry can tear out and splinter if a cut is rushed. The roundover is key to the smooth, clean feel of the piece.

laying up the veneers myself would've been prohibitively expensive.

Fortunately I was able to locate some nicely figured $\frac{3}{4}$ "-thick birch plywood, and this allowed us to keep the look we were after without spending a fortune or sacrificing durable construction.

Cutting and Edge-banding the Cabinet Parts

First inspect the edges of the plywood, because the joint between the solid-wood edge-banding and the plywood panel needs to be crisp. Although it is tempting, you can't assume that a factory edge is up to snuff, and a quick glance may reveal numerous dings, dents and scratches. I often end up ripping $\frac{1}{2}$ " off of each factory edge. To minimize tear-out on cross-cuts, I use a sharp plywood blade and a zero-clearance throat plate. Feeding the panels more slowly, good-side facing up, also helps keep the cuts free of tear-out.

Once your panels are neatly trimmed to size, it's time to mill some edge-banding. I use cherry because I like the color that it darkens to, but substitute as you like: I've also used walnut with pleasing results. I simply plane the cherry to $\frac{3}{4}$ ", then rip it into $\frac{1}{4}$ " strips. Precision is critical, as inaccurately sized strips will either overhang the plywood panels and need to be trimmed, or they won't cover the edge entirely and you'll have to make new ones. I usually mill some extra stock in case I notice a



Using spacers to position the drawer slides eliminates one of the leading causes of poor-fitting drawers: inconsistent spacing of slides. Before putting in the spacers, be sure to brush out any sawdust or woodchips that may have accumulated inside the cabinet. A $\frac{1}{16}$ " discrepancy at this point could cause an annoying misalignment that you'll have to backtrack to correct later on.



A consistent reveal is key to the crisp feel of the piece. The shims shouldn't bow the cabinet sides out at all, but should fit snugly to ensure that the drawer front is centered and that the reveal is even on both sides.

defect in one of the strips that wasn't evident beforehand. The cut list calls for 12 strips, which allows for one extra.

I own a few clamps that are designed for attaching solid-wood edge-banding, but they end up gathering dust for several reasons. To edge-band a number of panels requires more clamps than I'm willing to buy, and some clamps seem to lack the clamping pressure that I'd like. I also hate lugging heavy, clamp-laden panels around the shop while I wait for glue to dry. My solution is probably not original, but it is highly practical: I use blue painter's-grade masking tape. It is quick, inexpensive and lightweight. You can even stack a series of panels on top of each other to use space efficiently. And because an ounce of prevention is worth a pound of cure, I use just enough glue to create a tiny amount of squeeze out, which I then wipe up.

Because the edge-banding may overhang a bit, I use a router with a flush-trim bit to carefully remove the offending cherry; a careful touch with a random-orbit sander will remove any glue residue left over. The side panels need to be edge-banded on all four edges, and the top and bottom panels get edge-banded on their front and back edges only. The back receives no edge-banding at all. As a word of caution, veneered plywood is notoriously unforgiving when it comes to sanding. I've learned the hard way that there is no adequate method for repairing

sand-throughs in the top layer of veneer, so work carefully to ensure that you'll have to do a minimal amount of sanding.

Assembling the Cabinet

I use biscuits here because they are strong and reliable. In addition, they are invisible once the cabinet goes together, and I didn't want any filled nail holes or plugged screws interfering with the lines of the piece or interrupting the flow of the grain.

I assemble the cabinet in two steps: First I sandwich the back between the top and bottom, and once the glue there has set, I sandwich that assembly between the sides. For the first step, I clamp the three parts together and line them up precisely. After marking the locations for biscuits, I pull off the clamps and cut the slots. After dry-fitting, I glue it up and wait a few hours. For the second step, I place one side panel flat on the table, inside facing up. I position the top-back-bottom assembly correctly on top of that, and finally place the remaining side on top of it all. With a couple of clamps holding the parts snugly in place, I mark the biscuit locations, then repeat the process I used on the first half of the cabinet assembly.

With a roundover bit in a router, I ease each edge, which softens the sharp lines of the cabinet. By routing the edge-banding after the cabinet is assembled, the inside corners of the edge-banding flow together smoothly, and the eye is swept through

graceful little curves that add a fine detail to the finished piece.

Making the Drawers

I build the drawers out of Baltic birch plywood because it is attractive, stable and inexpensive. If you like, you can mill solid-wood panels for the drawer parts – if you do, dress the stock to 7/16", as the Baltic birch plywood sold as 1/2" actually measures out at 1/16" less. Refer to the cut list for the quantities and dimensions you'll need here. Once you've got the drawer parts cut, rip a groove in the bottom of each – you could use a dado blade here, but for a small number of parts like this, I don't take the time to change blades: I just make two passes side-by-side for the 1/4" groove.

For this project, I use a rabbet-dado joint to lock the drawer parts together. It is a strong mechanical joint with plenty of surface area for glue. I sketch it full-sized on paper, then set up my table saw to cut the dado on the inside face of the sides.

I use my miter gauge with a stop attached to make sure the dados are cut at a consistent distance from the ends of the drawer sides. This will take two passes. I then cut the rabbet in the drawer fronts and backs with a similar setup – just change the blade height and move the stop on your miter gauge to correctly position the cut. Test the fit of the joint now while you're still set up to make changes.

Once the rabbets and dados fit snugly, cut out the drawer bottoms. During glue-up, check that the drawers are square by measuring their diagonals. This ensures that the drawer fronts will line up evenly. If a drawer is slightly out of square, clamp it across the longer diagonal and apply pressure until it conforms. Once the glue dries, it should remain in the correct position.

So that hanging file folders can be easily slid forward and backward in the bottom drawer, you'll need to make two rails that mount on the top edges of the drawer sides. I mill two 20" strips of cherry to $\frac{1}{2}$ "x $\frac{5}{16}$ ". I then make two cuts with the table saw to create the "L"-shaped piece needed. The piece can then be screwed into the tops of the drawer sides – be sure to countersink the heads so that they don't stick up and interfere with the movement of files across the rails.

Installing the Drawers

I use 20" Accuride slides because they're smooth and reliable. Each drawer requires one pair of slides, and each slide can be separated into two pieces: The larger one mounts inside the cabinet, and the smaller one attaches to the drawer. I keep the slides together during installation, and I use plywood spacers to lay them out evenly. With the cabinet on its side, I insert the lower spacer (4- $\frac{5}{8}$ " wide), the first drawer slide, the middle spacer (6- $\frac{1}{4}$ " wide), the second drawer slide, the

upper spacer (2-7/8" wide), and finally the upper drawer slide. Then I simply screw the slides in place with three screws. After flipping the cabinet onto its other side, I repeat the process.

With the cabinet upright on my bench, I push the bottom drawer halfway in and place 1/8" shims underneath it to establish a consistent and correct height for the drawer. I pull out the slides (it should be a snug fit, but not excruciatingly tight) and line them up with the front edges of the drawer. I screw in the front edges of the slides, and then pull the drawer out all the way. With the shims still under the back edge of the drawer, I screw in the back-ends of the drawer slide. The top two drawers go in the same way, except I use thicker shims on top of the bottom drawer because it receives a taller drawer front to hide the tabs on file folders that protrude above the drawer box.

Trim your false drawer fronts to size on the table saw and iron on veneer tape to all four edges. To attach the drawer fronts, I remove the top two drawers and push the bottom drawer all the way into the cabinet. I then set the drawer front into position, using 1/8" shims on the bottom and sides to ensure a correct reveal all the way around. I use spring clamps to hold the drawer front in place, then I run screws into it from the inside of the drawer. The middle drawer front attaches the same way, but the top one doesn't have room to get a clamp around it. I solve this

dilemma by dabbing some quick-set epoxy on the back of the drawer front then pressing it into position. Flipping the cabinet onto its back and shimming around the edges of the drawer front assures that it will remain aligned. Once the epoxy has cured, the drawer front can be secured with screws like the others.

To attach the drawer pulls, I make a template from a scrap of ¼"-thick plywood and cut it to the same size as the upper drawer fronts. I draw lines across the vertical and horizontal centers of the template, and center my pull relative to these crosshairs. Once the holes are drilled on your template, you can place it directly on the drawer fronts and drill through your pre-positioned holes. Using a template like this might seem like extra work but, it saves time and guarantees consistent placement on each drawer front.

Finishing it Up

For an office environment, I favor the durability of oil-based polyurethanes, although if I were building this for my home, I might be tempted by the hand-rubbed feel of the newer gel varnishes. When your finishing process is completed, simply screw on four 2"-diameter wheels (locking casters will keep it from rolling around while you open and shut drawers), and bolt on the drawer pulls.

And now, the moment you've been waiting for: Go ahead and

fill those drawers with all the stuff that usually clutters up your desk.

While I can't promise that you'll be more efficient or productive as you tend to whatever paperwork keeps you away from the workshop, I'm confident that you'll enjoy the smooth, crisp look of your new rolling file cabinet. And the clean desktop isn't half bad, either. **PW**

Chris Gleason designs and builds contemporary furniture.

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Stickley Side Table

Try your hand at this side table to hone your skills

Patterned after the model #562 taboret shown in the L.&J.G. Stickley catalog of 1914, the original of this table now sells for \$1,600 at auction.

As with all white oak Arts & Crafts pieces, wood figure is important to make a simple design stand out. Choose the best figure for the top and the panel pieces. If the stretchers and legs are also well-figured, so much the better.

After cutting the legs to size, mark the best faces for showing off the grain. Then cut $\frac{3}{8}$ " x $2\frac{5}{8}$ " x 1"-deep mortises in the legs for the stretchers, and $\frac{3}{8}$ " x $1\frac{1}{8}$ " x 1"-deep mortises for the aprons. These mortises are centered on the width of the legs and located as shown in the diagram. I used a benchtop mortiser for this step, but you could also use a plunge router with an up-spiral bit to cut them. Now change the bit (either mortiser or router bit) to a $\frac{1}{4}$ " bit and mark and cut the $\frac{1}{4}$ " x $5\frac{3}{8}$ " x $\frac{1}{2}$ "-deep mortises for the panels in the aprons and stretchers.

With the mortises complete, head for the table saw and get ready to cut tenons.

I use a rip blade to form my tenons. I cut the cheeks first, then define the shoulders, so there isn't a chance of the



The best method for mortising is to first bore the areas at either end of the mortise, then space the next few mortises the width of the mortising chisel. In this case, the spacing works almost perfectly. The goal is to allow the chisel bit to have enough wood to drill straight without wandering from side-to-side. On some mortises the spacing between the first holes will be less than the width of the chisel.



Complete the mortise by drilling away the waste between the first mortises. This allows the mortise chisel to cut most efficiently without pulling to the left or right and bending the chisel.

shoulders being accidentally notched by the saw blade during the cheek cut. By cutting the shoulder last, any "notching" will happen against the tenon cheek.

When making the shoulder cut on the table saw, it's easiest to use the rip fence to define the 1"-tenon length. If you use the fence to the right of the blade, and the miter gauge to the left of the blade you will trap the fall-off piece between the blade and fence, causing it to shoot back from the blade. Instead, set the fence for 13" to the right of the blade and use the miter gauge to the right of the blade as well. This way you can cut both tenoned ends with a single setup, and the waste will fall harmlessly to the left of the blade. If you're paying careful attention, you will realize 1" tenons are going to bump into one another in the mortises. After cutting the tenon shoulders, reset the fence and the blade angle to cut 45° miters on the ends of the tenons.

Don't leave the saw yet. You still need to form the $\frac{1}{4}$ " x $5\frac{1}{4}$ " x $\frac{1}{2}$ " tenons on both ends of the panels. You might have noticed that the tenons are $\frac{1}{8}$ " less wide than the mortise dimensions. This is no mistake. When the side panels are positioned between the stretchers and aprons, the shoulders of the panel tenons will fit snug against the stretchers and rails. If the mortises in the legs were the exact width of the tenons, and off by even a little bit, they would force a gap between the panels

and the two rails. The 1/8" extra space on the panel tenons is to allow for wood movement.

Next, mark the 1" curve on the bottom edge of each stretcher and cut the shape on the band saw. The easiest way to mark this curve is with a flexible 1/8" wood strip bent to the 1" mark and then traced with a pencil.

One last step before assembly. The top is held in place by table top fasteners. These are screwed into the underside of the top, and fit into 1/8"-wide grooves in the aprons. These fasteners allow the top to adjust to wood movement without affecting the base. Run these grooves on all four aprons on the table saw. This will let you decide which way the top will fit later.

You're ready to sand, then glue up the base. A dry fit is definitely a good idea to make sure everything fits and to make sure you know how to hold everything in place once the glue goes on.

With the base glued and clamped, cut the pieces for the top, and glue them together. To reduce the amount of sanding necessary, a few biscuits added to the joint will help align the pieces and keep them from slipping during glue-up. When the base is ready, mark each of the peg locations on the mortise and tenon joints, and drill a 1-1/4" x 1/4" hole at each location. Then peg the holes with 1/4" oak dowels. Cut the excess dowel length flush to the table leg and

finish sand.

Unclamp the top and sand it flat. Then mark 2-½" in from each corner and run a line at a 45° angle to clip the corners of the top on the band saw to an octagon shape. Then finish sand the top.

I used the same finish on the table that was used on the chair. If you've built the chair as well, put a nice lamp on the table, get a good book, and sit down to some early 20th century comfort.

PW

David Thiel is a senior editor at *Popular Woodworking*

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10" Sliding Compound Miter Saws



Miter saws have come a long way from being used primarily as a machine for chopping 2x4s on job sites. In fact, they've become so sophisticated and accurate that many woodworkers don't even consider using their table saw to cut a miter. And when it comes to straight crosscuts, 10" sliding compound miter saws have all but replaced the radial-arm saw. But, like most toys in your shop, these advanced precision machines are pricey. So we decided to look at the available options to make sure your money is well-spent.

You can download the "10" Sliding Compound Miter Saws" review from our [August 2004](#) issue (in PDF form) by [CLICKING HERE](#).

Folding Sawhorses



You might say that this is an unusual product for a woodworking magazine to test. So did some of our editors. But if you think about it, the entire weight of your project rests on these supports. Because of that, we put half a dozen to the test to make sure you're never let down, no matter the task.

You can download the "Folding Sawhorses" review from our [June 2004](#) issue (in PDF form) by [CLICKING HERE](#).

Metal-bodied Spokeshaves



After years of having only poorly made tools to choose from, woodworkers now have some excellent new spokeshaves at their disposal. We help you understand the lingo and how to use these tools, then we examine 7 spokeshaves to tell you which are our favorites.

You can download the "Metal-bodied Spokeshaves" review from our [April 2004](#) issue (in PDF form) by [CLICKING HERE](#).

13" Portable planer



In the 2 years since we reviewed portable planers, several manufacturers introduced 13"-wide machines, some of which even have two feeding speeds. So it was clear that it was time to take another look. We tested 7 premium machines to find out which one belongs in your shop

You can download the "13" Portable planer" review from our [February 2004](#) issue (in PDF form) by [CLICKING HERE](#).

Orbital Jigsaws



There are a bunch of quality saws out there, but not all of them can pass our test. We selected a dozen jigsaws that have orbital cutting action (meaning the blade moves forward during the upward cut, then returns to a straight up-and-down motion on the return cut) to see which is the best for you.

You can download the "Orbital Jigsaws" review from our [November 2003](#) issue (in PDF form) by [CLICKING HERE](#).

Entry-level Plunge Routers



Think you can buy a good plunge router for less than \$125? Well, you'd be correct. Many of these tools are priced even less than that, and still have lots of great features.

You can download the "Entry-level Plunge Routers" review from our [August 2003](#) issue (in PDF form) by [CLICKING HERE](#).

Shop Aprons



It's a rare day when your neighbor dashes over after hearing about your new 600-denier Cordura nylon shop apron with fully adjustable straps. In the realm of woodworking, shop aprons just aren't exciting. But they can be compulsory for people who like to have certain tools within reach at all times. We tested 7 popular designs that cost less than \$50 looking for the best.

You can download the "Shop Aprons" review from our [June 2003](#) issue (in PDF form) by [CLICKING HERE](#).

Steel-frame Band Saws



Steel-frame machines are the hottest thing in the band-saw market. But many people are wondering if it's time they got one for their shop. Check out this article to see if these tools are right for you.

You can download the "Steel-frame Band Saws" review from our [June 2003](#) issue (in PDF form) by [CLICKING HERE](#).

12-volt Drills



After testing 16 professional- and consumer-model drills, we know that 12 volts is enough for woodworkers. But there are still lots of quality tools to choose from. So we put a bunch to the test for you.

You can download the "12-volt Drills" review from our [February 2003](#) issue (in PDF form) by [CLICKING HERE](#).

If you have questions about any of the tool reviews you see here, please contact [Associate Editor Michael Rabkin](#).

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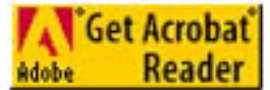
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From the Magazine and Books

If you saw something in *Popular Woodworking* magazine that told you to look on our web site, it's probably here. Check out our list of fixes, full-size plans and additional information below, and if you want to see the magazine where the article originated, just click on the publication date (or name of the special publication) to purchase the back issue. But supplies are limited, so act fast.

Some of the files listed on this page are PDF files. To view them, you will need to download Adobe Reader on your computer, which you can get (for free) by clicking here.



If you have a correction to report, [CLICK HERE](#).

[April 2005](#)

Looking to download Nick Engler's calculator for figuring compound miters ("Woodworking Essentials Advanced Joinery, Chapter 5)?

Click [HERE](#) (You'll need Microsoft's Excel spreadsheet program.)

[October 2004](#)

Correction for "Dadonator Makes the Cut" Tool Test

Infinity Cutting Tools' number is 877-USA-BITS (877-872-2487) not 800-430-9920.

Make Your First Cabriole Legs

PATTERN: To download the full-size pattern for the leg, [CLICK HERE](#).

MAKE SURE your printer is set up to print these files (and all patterns) at 100% - do NOT have it shrink to fit. **NOTE:** These files are PDF files. To view them, you will need to download Adobe Reader (for free) by clicking [HERE](#).

News & Notes: The Ultimate Scrounger Buys 109 Tools for \$100

Here is Hal's list of 75 tools, plus a photo of his collection. Measuring and marking: try square, combination square, spring rule, marking gauge, bevel square, compass, carpenter square, large try square, marking knife, folding rule, straight edge, level; Sawing: crosscut saw, back saw, coping saw, hacksaw, finer cut crosscut saw, rip saw; Planing: block plane, #5 bench plane, small plane; Chiseling: 1/4" chisel, 1/2" chisel, 3/4 or 1" chisel, gouge, wide/heavy chisel, mortise chisel, plastic handle chisel; Drilling: brace, some bits for brace, eggbeater drill, some twist bits, expansion bit, countersink bit,

regular screwdriver bit, phillips head bit, gimlet; Cutting: penknife, scraper, hatchet, carving knife, utility knife; Striking: hammer, mallet, nail set, ball peen hammer; Clamping: 2-4" C clamps, 2 bar clamps, 2 small C clamps; Screwdrivers, Pliers, etc: pliers, regular screwdriver, phillips head screwdriver, bullnose pliers, adjustable wrench, wire brush. paint scraper, awl, putty knife; Sharpening: combination stone, strop, oil can, triangular file, larger triangular file, sawset, slipstone, auger file, bastard file, smooth file, burnisher, saw vise, card file



August 2004

Correction for At the Lathe

To make a cove cut, the gouge should be turned counterclockwise -- not clockwise -- as was shown in a photograph on page 78.

Correction for Isaac Youngs Wall Clock

The cutting list for the clock lists the back as 1/2" plywood. It actually is 1/4" plywood, as indicated in the illustration.

To download the illustration that we used for the face of the clock, [CLICK HERE](#). **NOTE:** This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by clicking [HERE](#).

10" Sliding Compound Miter Saws

If you want to build the Miter Saw Mobile Stand featured in this article, [CLICK HERE](#).

The Case for Handsaws

To build the tool chest featured in the opening photo of "The Case for Handsaws," [CLICK HERE](#). Or, if you'd like to check out a sawmill to hold your handsaws, [CLICK HERE](#).

Caption the Cartoon Winners

The winning entries for [Cartoon #64](#) from the April 2004 issue are as follows:

The winner, who will receive Ryobi's 3-Base Router Combo Kit, is **Alex Wiese** of Carmichael, California (*"Honey, this isn't funny. You know I had three bean burritos for dinner."*)

First runners-up, who each win a one-year subscription to **Popular Woodworking** are **Daryl Ertl** of Viroqua, Wisconsin (*Not the sharpest tool in the cabinet.*), **Bill Houghton** of Sebastopol, California (*"They always tell you, collect the dust at the source."*) and **Daniel Furnkranz** of Moravia, New York (*"Not until after the rummage sale."*)

[June 2004](#)

Correction for Portable Writing Desk

The drawer front and back length is 2-3/4" not 2" as stated in the cutting list.

Letters to the Editor - Stop Rust Now

We have received a number of letters commenting on the article "Stop Rust Now" that we ran in our [April 2004](#) issue and have selected a number of these letters to share with our readers. To view them, [CLICK HERE](#). If you have any further questions or comments, feel free to send an e-mail to Associate Editor [Michael Rabkin](#). Or you can send a letter through the regular mail to *Popular Woodworking*, 4700 E. Galbraith Road, Cincinnati, OH 45236

Caption the Cartoon Winners

The winning entries for [Cartoon #63](#) from the February 2004 issue are as follows:

The winner, who will receive Amana Tool's new Patented E-Z Dial Slot Cutter, is **Raymond I. Hoopes Jr.** of Friendship, New York (*"Hey, Joe! Would you stop laughing and just show me how to use my new mobile base?"*)

First runners-up, who each win a one-year subscription to *Popular Woodworking* are **Ira Wood** of Galveston, Texas (*He was told he could saw larger boards by "adding 4 feet" to his table saw.*), **John Brander** of Factoryville, Pennsylvania (*"I can't quite figure out why this thing won't start running!"*) and **Paul Harker** of Aurora, Illinois (*"Vibration problem solved.*

Next up: Identify source of puzzling odor.")

[April 2004](#)

Links to find Vintage Stanley Spokeshaves

In the tool test of "Metal-bodied Spokeshaves," we promised you some links to get started if you're looking for a vintage Stanley 151 spokeshave or similar model. For information about how to buy an antique metal spokeshave, [CLICK HERE](#). For information about how to sharpen a wooden spokeshave, [CLICK HERE](#). For information about how to make your own wooden spokeshave, [CLICK HERE](#).

Sharpening Tutorial for "Mortise & Tenon Basics"

To download the article "Sharpening Plane Irons & Chisels" [CLICK HERE](#).

NOTE: This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by clicking [HERE](#).

[February 2004](#)

Eames-style Table

CORRECTION: In the story, we said plastic resin glue is also known as resorcinol. Resorcinol is actually a different kind of glue that is more difficult to find and is more expensive. Either glue will work for the project.

PATTERNS: To download the leg pattern for the table, [CLICK HERE](#). Also, we have the pattern for the leg-bending jig, which you can download if you [CLICK HERE](#). **MAKE SURE** your printer is set up to print these files (and all patterns) at 100% - do NOT have it shrink to fit, especially for the Leg-bending jig, which is set up on 8 1/2" x 14" paper. **NOTE:** These files are PDF files. To view them, you will need to download Adobe Reader (for free) by clicking [HERE](#).

Corrections for The Joint Maker

A number of items in this story were incorrect: **The slides** (parts H and J) should be 3/8" thick, not 3/4"; the slots they fit into should be 3/8" deep, not 1/4". The Cutting List dimensions on page 79 were incorrect; the Top Layout Plan illustration on page 81 is correct.....**The compression springs** should be 1-1/2" long, not 5" long.....**Sheet metal screws** don't require nuts.....**The lower slots**, shown in the Carriage Layout, are 5" long, not 6" long as shown.

Serpentine Table Patterns

To download the full-size patterns to make Warren May's curved table, check out the following pages (These are all in 8-1/2" x 11" pages that you can tape together and affix to your lumber to make the curves): [The Front Legs](#) [The Drawer Front & Rails](#) [The Side Aprons](#) [The Top](#). **MAKE SURE**

your printer is set up to print these files (and all patterns) at 100% - do NOT have it shrink to fit. **NOTE:** These are PDF files. To view them, you will need to download Adobe Reader, which can be done (for free) by clicking [HERE](#).

Letters to the Editor - The Truth About 240V

We have received a number of letters commenting on the article "*The Truth About 240V*" that we ran in our [November 2003](#) issue. We have selected a number of these letters to share with our readers, along with responses from Greg Hyland, a certified electrician and co-author of the article. To view them, [CLICK HERE](#). If you have any further questions or comments, feel free to send an e-mail to popwood@fwpubs.com. Or you can send a letter through the regular mail to *Popular Woodworking*, 4700 E. Galbraith Road, Cincinnati, OH 45236

Jim Tolpin's Universal Rip Fence Fixture

In the article, one of the photo captions discussed the 24" framing square. To see this device used to set the second support square to the first, [CLICK HERE](#). Also, the illustration of the rip fence sled has been updated, showing the locations of the slotted holes. To see this new illustration, [CLICK HERE](#).

Upgrade Your Workbench with a Deadman

To download a construction drawing to create a deadman, [CLICK HERE](#). **MAKE SURE** your printer is set up to print these files (and all patterns) at 100% - do NOT have it shrink to fit. **NOTE:** This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by clicking [HERE](#).

[December 2003](#)

Router Table Plans

In Chapter Three of "Woodworking Essentials" about the Router Table, we said the plans were available in our June 2001 issue, which you could purchase as a back issue. Unfortunately, we've run out of that issue, so we've uploaded that article here. To download "Router Table-Mate," just [CLICK HERE](#). It's a rather large file, so be prepared. **NOTE:** This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by clicking [HERE](#).

Learn more about Sharpening as mentioned in Checkbooks, Beer & Hand Planes

To download the article "Sharpening Plane Irons & Chisels" [CLICK HERE](#). **NOTE:** This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by clicking [HERE](#).

More Information about Forbidden Forests

To read the article titled "Buying Submerged Lumber" by Gregory Crofton,

[CLICK HERE.](#)

[November 2003](#)

Patterns for Limbert Tabourette

To download the full-size drawing of the legs for the table, click [HERE](#). To download the full-size pattern of this table's shelf, click [HERE](#). **NOTE:** These files are both PDF files. To view them, you will need to download Adobe Acrobat (for free) by clicking [HERE](#).

Creating the Fruit Bowl with CAD

To download project illustrator John Hutchinson's recipe for using CAD to create the fruit bowl, click [HERE](#). **NOTE:** This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by clicking [HERE](#).

[October 2003](#)

German Work Box

At the [WoodWorks 2003-04](#) shows, we brought the German Work Box along to show to our fellow woodworkers, along with the free project plans to show them how to build it. Well, so many people were interested that we actually ran out of copies. So if you were looking for the (FREE!) plans to build this Work Box, just [CLICK HERE](#) for the actual article as it ran in this issue. Also, to download an optimization chart for the box, [CLICK HERE](#). **NOTE:** This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by clicking [HERE](#).

Correction for 12 Best Tool Values

The phone number for Grizzly Industrial was incorrect. The correct number is 800-523-4777.

[Furniture Building 2003](#)

Iris Pattern for Byrdcliffe Cabinet

To download the full-size pattern of the 6" x 12" iris mentioned in "Arts & Crafts Byrdcliffe Cabinet," click [HERE](#). **NOTE:** This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by clicking [HERE](#).

[August 2003](#)

Clarification about Special Paint

In the "Lusting for Lumber" article, we mentioned a special paint that reduces checking in wood as it air-dries. This sealer is item #125305, available from Woodcraft, 800-225-1153 or at [woodcraft.com](#).

[Great American Furniture 2003](#)

Ellipse-layout Jig plans

For the ellipse-layout jig plans as mentioned in "Butler Tray Table," click [HERE](#). **NOTE:** This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by clicking [HERE](#).

[June 2003](#)

QuickCAD drawing files as mentioned in the CAD for Woodworkers Article

If you have QuickCAD, choose any of the following three protoype files. The files' parameters have been preset, which will make your QuickCAD software more woodworker-friendly. For the Kentucky sideboard drawing files, click [HERE](#). For the dresser drawing files, click [HERE](#). For the bottom rail drawing files, click [HERE](#).

If you don't have QuickCAD, click [HERE](#) for a PDF image of the drawing files. **NOTE:** This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by clicking [HERE](#).

Correction to the Saw Blade Box

The 3/4"-wide x 1/2"-deep rabbet should be cut on two short edges and one long edge of the top and bottom of the box, not on two long edges and one short edge.

[Ultimate Home Woodshop 2003](#)

Correction to the Machinist's Tool Chest

All the panels listed in the cutting list (End A panels, Back E panel, Flipper door G panel and Lid H panel) should be 5/8", not 1/2" as stated.

Tilting Router Stand Cutting List

For Nick Engler's "Incredible Tilting Router Stand" cutting list (as also featured in our January 2000 issue), click [HERE](#). **NOTE:** This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by clicking [HERE](#).

[April 2003](#)

Dovetail Jig for Wardrobe

For Troy Sexton's \$19.99 dovetail gig, which helps you build the "Classic Wardrobe," click [HERE](#).

Sharpening Plane Irons & Chisels

We've tried just about every sharpening system there is - from sandpaper to ceramics to waterstones. Here's how to get the best possible edge with the least amount of fuss. To download the article, click [HERE](#). **NOTE:** This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by

clicking [HERE](#).

[American Heritage Furniture 2003](#)

Reciprocating Foot Lathe plans

For Owen Rein's reciprocating foot lathe and drilling stand plans, click [HERE](#).

Correction to the Traditional Entertainment Center

The six door rails should be 2-1/2" wide, not 3-1/2" wide. The cutting list is wrong, the drawing is correct. This correction also applies to the Traditional Entertainment Center, as it appeared in our June 2001 issue.

[February 2003](#)

More Information on the Shepherd Smoothing Plane

For more photos and construction details on the Shepherd infill smoothing plane, click [HERE](#).

More Information on the Built-in Bookcase Article

For an optimization chart for the "One-weekend Bookcase" in pdf format, click [HERE](#). One more note: the McGrath scribing tool shown in the step photos has been discontinued and is no longer available. **NOTE:** This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by clicking [HERE](#).

[October 2002](#)

Correction to the Ultimate Miter Saw Stand

The caption on page 32 says to order item #141961 from Woodcraft. The correct item number is #128219.

[Woodshop Projects 2002](#)

Looking for the \$40 Drill Press Table?

This article was cut at the last minute but, by mistake, was still advertised on the cover. You can download the complete project plans by clicking [HERE](#).

Correction to the 24-hour Workbench

On page 6, you need to make the legs by ripping a 2 x 8, not a 1 x 8 as stated.

Correction to the Ultimate Miter Saw Stand

The caption on page 29 says to order item #141961 from Woodcraft. The correct item number is #128219.

[August 2002](#)

Octopus Whirligig: The Movie

Some readers have been curious as to what the tentacles on the Octopus

Whirligig actually do when the wind blows. Author John Hutchinson provided us with this mpeg movie that you can download to get a look. It's a big file (1.3 megabytes), but it's worth the download. Click [HERE](#).

Looking for the plywood optimization chart for the Power Tool Workbench?

This pdf file shows you how to lay out your cuts on the 3/4" and 1/2" plywood sheets for the bench's toolbox. Click [HERE](#). **NOTE:** This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by clicking [HERE](#).

Barb Siddiqui's Chess Box

In our "Out of the Woodwork" column, "A Lesson in Precision," Barb Siddiqui discusses the difficulties she encountered when building this chess box without the proper mind set. You can look for her article on page 88.



[June 2002](#)

Errors in the Review of Precision Plunge Routers

In our review of precision plunge routers we made two mistakes in our discussion of the Makita RP1001. We stated that the router has no means of dust collection. There is a shroud available as an accessory when the router is purchased by itself. Also, we stated in the chart that the Makita does not have a self-releasing collet when it actually does. We regret the errors.

Error in Resawing With the Band Saw Article

We listed the wrong tooth configuration for the blade recommended for resawing. The blade is a Lenox 3/8", 3/4 variable-pitch blade sold under Lenox's Tri-Master line. For information on where to purchase this excellent carbide-toothed band saw blade, call Lenox at 800-628-8810.

[Outdoor Furniture 2002](#)

Two Corrections to the Outdoor Morris Chair

Two corrections to the Outdoor Morris Chair drawing and schedule on page 27: In the chair profile view, the width of the front leg should be 2-3/4" rather

than 2-1/4". In the schedule, the four rear legs should be 20-1/8" long, not 21".

[February 2002](#)

Errors in the Review of Contractor Saws

In the article "Choosing a Contractor Table Saw," we listed the Ridgid TS2424 as a right-tilt saw. It is a left-tilt machine. Also, in the chart we listed the Bridgewood TSC-10CL as having two cast wings. As stated in the text of the article, it has only one.

[June 2001](#)

Correction to the Limbert Bookcase

On page 42 the story says the dado in the bottom should go 2" from the bottom. The drawing shows it at 2-1/2". The drawing is correct.

Correction to the Cope & Stick article

On page 53 the captions on the two photos are reversed. The top photo is the cope cutter; the bottom cuts the stick.

[April 2001](#)

Looking for full-size plans to John Hutchinson's Sea-D Otter project?

Click [HERE](#) You still need the text of the story to build the project. The April 2001 issue is for sale in our back issues department. **NOTE:** This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by clicking [HERE](#).

Looking for the optimization chart for the All-in-One Cabinet for the Small Shop?

Click [HERE](#). **NOTE:** This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by clicking [HERE](#).

Looking for the drawing that explains measuring the slope from the horizontal?

Click [HERE](#). **NOTE:** This file is a PDF file. To view it, you will need to download Adobe Reader (for free) by clicking [HERE](#).

The Biscuit Joiner Project Book

Corrections to the Knockdown Media Center

Quantities for the side parts should be: 6 legs, 2 top rails, 2 center rails, 2 bottom rails, 4 top panels @ 18-3/4"W x 34-1/4"L, 4 bottom panels @ 18-3/4"W x 19-5/8"L. There are no feet E. There are 4 door rails @ 3-1/2"W. These are the bottom rails on both the upper and lower doors. The top rails for all doors are 2-1/4"W. Cut the upper door panels @ 11-1/8"W x 34-1/4"L and the lower door panels @ 11-1/8"W x 19-3/8"L.

Authentic Arts & Crafts Furniture Projects (Popular Woodworking Books)

New cutting list for the Limbert Waste Box

Due to a production error, the correct cutting list was not printed. Click [HERE](#) for the correct cutting list.

Correction to the Stickley Side Table

The length of the legs (part A) should be 21-1/8".

February 2001 issue

Looking to download plans for The Little Shop That Could Mark II?

Click [HERE](#)

Special Storage & Shelving Issue

Correction to the text of the Barrister Bookcase article

On page 15 in the center column, there's a typo. We listed the location of the hole centers as being 1-3/16" down from the top edge. It's actually 13/16". Also, in the drawing below that, we listed the distance between the front of the door and the case front as 1/4". It's actually 1/8".

December 2000 issue

Looking to download Nick Engler's calculator for figuring compound miters?

Click [HERE](#) (You'll need Microsoft's Excel spreadsheet program.)

Correction to the drawing of the Dovetail Jig

Some readers have been confused as to why we tell you to make a 36"-long piece to build a 6" jig. This allows you some extra stock to make other similar jigs and makes cutting the miters and bevels much safer. On the drawing there is one correction. The 2-1/8" dimensions on the face piece should be 1-5/8" each. The cutting list is correct.

August 2000 issue

Looking for full-size plans to John Hutchinson's Secret Toad project?

Click [HERE](#) You still need the text of the story to build the project.

Correction to the cutting list of the Ultimate Miter Saw Stand

The width of the back should be 24-1/2". And the dimensions for parts "U" and "V" were transposed. The dimensions are correct.

Correction to the drawing of the Folding Plant Stand

The 8" dimension on the back should be 7-1/4".

Correction to the drawing of the Scrapwood Scraper Plane

The length of the sides is shown as 12". Though the exact length isn't critical, the actual dimension is 9".

June 2000 issue

Correction to the "Stickley Side Table"

The length of the legs (part A) should be 21-1/8".

April 2000 issue

Corrections to the "Icebox Entertainment Center"

Attach the mitered base pieces to the front of the case with glue and screws. Use a biscuit in the miters. Attach the base pieces to the sides with screws in slotted holes to allow movement. On the face frame, there's no shoulder on the top rail. So the mortise on the stile is open on the end of the stile. Ignore the door's mortise dimensions in the photo caption. Actual mortise dimensions are 1/4" x 1-3/4" x 2-1/8" for the upper rail and 1/4" x 2-1/4" x 2-1/8" for the bottom rail. These are 3/8" in from the stile end. Tenon sizes are stated on page 65. The notch dimension is wrong. It should be 3/8" x 1-3/4".

Correction to the cutting list of "Magic Shelves"

The hardwood cleat material should actually be 7/8" x 1-1/8"

November 1999 issue

Looking for CAD drawings of the Greene & Greene Blacker House bench?

Click [HERE](#) You still need the text of the story to build the project.

September 1999 issue

Looking for the full-size pattern for the Martha's Vineyard Cupboard?

Click [HERE](#) You still need the text of the story to build the project.

Correction to "Little Shop that Could Mark II"

Under the section titled "Drawers & Doors," the fourth sentence should read "Use a 1/4" x 1/2" rabbet cut on the drawer sides, and use a 1/4" x 1/4" groove..."

Correction to "Restoring a Hand Plane"

In the sidebar on removing rust with electrolysis, the story says to use baking powder and the caption says to use baking soda. Baking soda is the correct material.

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CURRENT ISSUE – Popular Woodworking April 2005 (Issue 147)

Price: \$8.00

One Weekend Router Table: Our ingenious, inexpensive and quick-to-build router table clamps into your bench vise and stores easily. PLUS: Learn how easy authentic Greene & Greene details are to make plus plans for a beautiful sideboard • Lonnie Bird teaches you the fundamentals of layout • Don Weber shows you how to combine hand-tool and power-tool skills to build a toolbox • Scott Gibson takes a look at Festool's system of portable power tools • Several chairmakers offer their best tips and tricks • Build a plant stand this weekend • New series about working quickly and efficiently with hand tools reveals a nearly extinct tool – the striking knife • Learn how to turn projects with fitted lids • Cut the tongue-and-groove joint quickly and accurately • Choose an exterior coating • We endurance test Bench Dog ProLift AL • We put Fein's new cordless drill, Ashley Iles turning tools, Grizzly's disc/spindle sander, Veritas straightedges and the Drill Doctor through our Tool Test • Great Tricks of the Trade • Q&A • and much more.

Articles and Features

Woodworking Essentials Chp. 5: Advanced Joinery

by Nick Engler
Article length: 8 pp.

The table saw can be used to create a surprising number of complex joints, such as compound miters, tenons, dovetails, lock joints and splines. We show you how. Plus, how to build a microadjustable finger-joint jig.



[Add to Cart](#)



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Tricks of the Trade: Shooting Board for Veneer

Page number: 18; Article length: 3-2/3 pp.

A jig and a hand plane are all you need for tight veneer joints. Plus, learn to tie a super-strong knot for transporting lumber, the wrong type of metal for jigs and a trick to vacuum in tight spaces.



Traveling Toolbox

by Don Weber

Page number: 44; Article length: 5 pp.

Don Weber weds hand-tool and power-tool techniques to create a sturdy, handy toolbox. Article includes detailed instruction, step photos, illustrations and a cutting list. Also included is information on hand-forged hardware and the plow plane.



Total Shop in a Box

by Scott Gibson

Page number: 57; Article length: 5 pp.

German tool manufacturer Festool offers a well-made system of portable power tools. See if it's the right solution for your shop.



Tool Test: All-new Fein Cordless Drill

Page number: 28; Article length: 3 pp.

After putting Fein's new 12-volt cordless drill through a series of tests we've labeled it one of our favorites. Plus, Ashley Iles turning tools, Grizzly disc/spindle sander, Veritas straightedges, Automatic Flute Spacing Jig, Silas Kopf's "The Master Techniques of Marquetry" DVD and the increasingly popular Drill Doctor.



Q&A: Clamping Strategies for Flat Panels

Page number: 14; Article length: 1-1/3 pp.

Properly positioned clamps and a flat work surface allow you to glue up large panels that end up flat. Plus, true up a panel with hand planes and learn how to correctly store your wood.



Power-tool Joinery: Tongue and Groove

by Bill Hylton

Page number: 86; Article length: 3 pp.

When building furniture, this joint is excellent for edge-to-edge glue-ups. Here are some good ways to cut both parts of the joint quickly and accurately.



Out on a Limb: Making Chairs & Exploring Mysteries

by Steve Shanesy

Page number: 8; Article length: 2/3 page

Don Weber, a traditional woodworker and chairmaker, spent four days showing several of us how to build Welsh stick chairs. Editor and Publisher Steve Shanesy shares what he learned. Plus, Shanesy introduces a new column: Arts & Mysteries. Contributors column features Scott Gibson and Eric Hedberg.



Out of the Woodwork: Almost a Plane Wreck

by Christopher Schwarz

Page number: 104; Article length: 1 page

The perilous flight of the world's most valuable tool.



One-weekend Router Table



by David Thiel

Page number: 70; Article length: 6 pp.

Forget the pricey commercial ones that hog precious shop space. This inexpensive, quick-to-build router table clamps into your bench vise and stores easily.

Greene & Greene Sideboard



by Robert W. Lang

Page number: 36; Article length: 8 pp.

We unearthed original Greene and Greene drawings and discovered that signature details on their furniture were originally built without fuss. Here's how. Article includes detailed instruction, illustrations, step photos and a cutting list for building a Greene and Greene sideboard.

Fundamentals of Layout



by Lonnie Bird

Page number: 76; Article length: 4 pp.

Laying out joints carefully is the first (and most important) step for accurate work. Here are the basic principles you should know to do the job well.

Flexner on Finishing: Choosing an Exterior Coating



by Bob Flexner

Page number: 98; Article length: 3 pp.

Five different types of protection exist. Here's a guide to choosing the best one for your project.

Endurance Test: Bench Dog ProLift AL



by David Thiel

Page number: 26; Article length: 1 page

The manufacturer has improved some things we wanted changed on what is still a shop favorite.

Cheating at Chairmaking



by Schwarz, Weber, Hedberg, Matthews & Young

Page number: 62; Article length: 8 pp.

You don't need a slew of tools or specialized skills to call yourself a bodger. Our list of tips and tricks will have you shaping seats in short order.

Best-selling Plant Stand



by Barry Black

Page number: 80; Article length: 6 pp.

Barry Black sells a ton of these at shows each year.

Simple to build, this little table fits well in any home. Article includes detailed instruction, illustrations, step photos and a cutting list.

At the Lathe: Strategies for a Fitted-lid Box



by Judy Ditmer

Page number: 92; Article length: 3 pp.

Turning objects with fitted lids can be challenging. Our egg box project is the perfect practice piece.

Arts & Mysteries: The Striking Knife



by Adam Cherubini

Page number: 32; Article length: 3 pp.

Our new series about working quickly and efficiently with hand tools starts off by revealing how a nearly extinct tool, the striking knife, can greatly improve your accuracy at woodworking.