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- Build An All Purpose Workbench For Under \$300
- Use Our Full Size Patterns To Make a Traditional Country Bench
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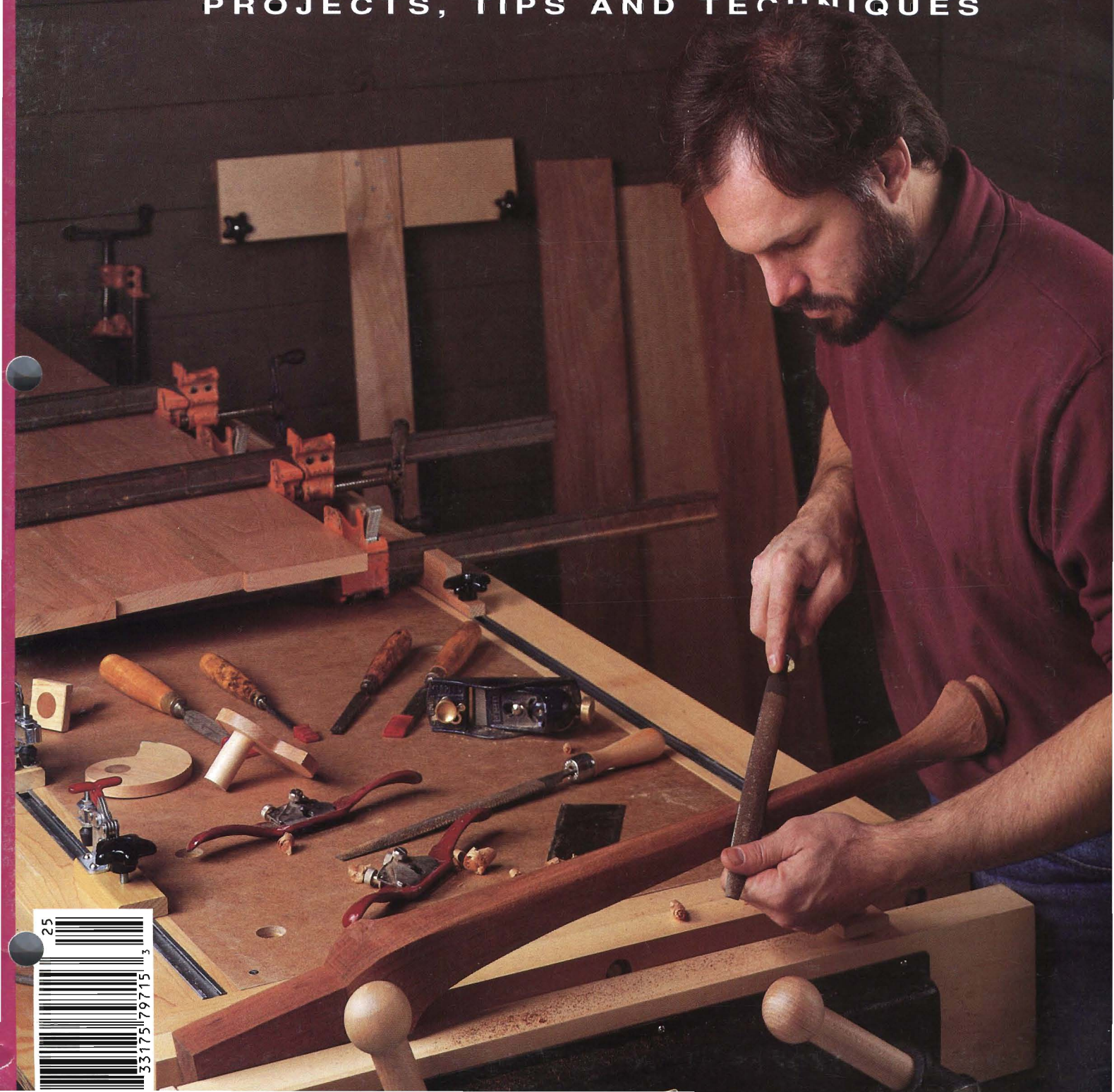
TODAY'S

Issue 25

\$3.95

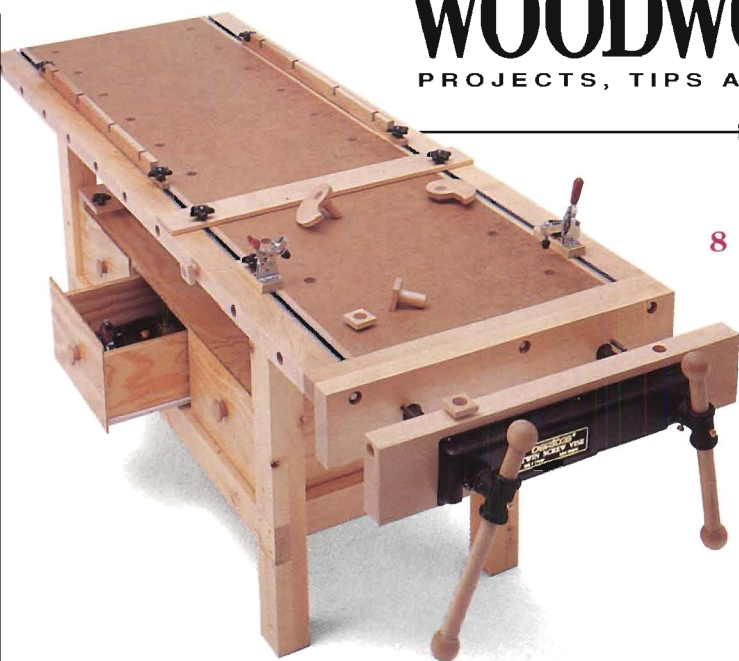
WOODWORKERTM

PROJECTS, TIPS AND TECHNIQUES



TODAY'S WOODWORKER™

PROJECTS, TIPS AND TECHNIQUES



8 Budget Workbench

By Rick White

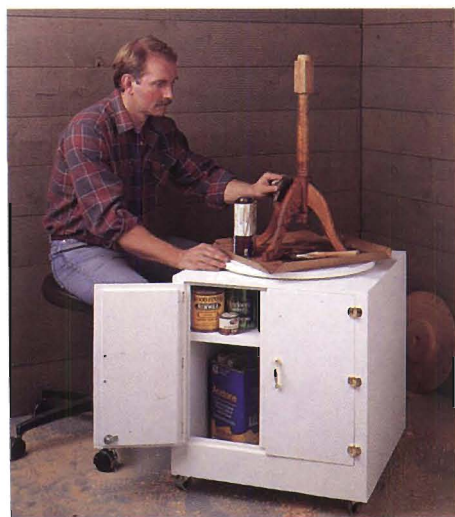
Don't let a tight budget force your hand — this workbench has it all.



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Who can resist a toy car with swinging doors and trunks that open?



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Make your shop a safer place to work while gaining a back saving finishing stand.

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A colonial classic with lots of modern appeal.



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Safety First

Learning how to properly operate power and hand tools is essential for developing safe woodworking practices. For purposes of clarity, necessary safety guards have been removed from the equipment shown in some of the photos and illustrations in Today's Woodworker. We in no way recommend using this equipment without safety guards and urge readers to strictly follow manufacturer's instructions and safety precautions.

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Today's Woodworker, (ISSN: 1041-8113) is published bimonthly (January, March, May, July, September, November) for \$18.95 per year by Rockler Press, 21801 Industrial Blvd., Rogers, MN 55374-0044. Second class postage paid at Rogers, MN and additional mailing offices.

POSTMASTER: Send address changes to Today's Woodworker, PO Box 420235, Palm Coast, FL 32142-0235.

One year subscription price, \$18.95 (U.S. and possessions); \$23.95 (U.S. currency — other countries). Single copy price, \$3.95; (other countries, \$5.50, U.S. currency). Send new subscriptions to Circulation Dept., Today's Woodworker, PO Box 420235, Palm Coast, FL 32142-0235. Subscribers are welcome to submit project proposals, tips and techniques to the editor, Today's Woodworker, Box 44, Rogers, MN 55374. For purposes of clarity, illustrations and photos are sometimes shown without proper guards in place. Today's Woodworker recommends following ALL safety precautions while in the shop.

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Where Do I Find Those Slides?

About the time Columbus was making his famous voyage 500 years ago, a long-leaf yellow pine sapling was taking root in the southeastern United States. And there it stood for some 350 years, until loggers in the last half of the 19th century cut it down. Part of that tree, a 14" by 10" beam about 18 feet long, made its way upriver and found a home in a warehouse in Montana. And there that beam stood until a year ago when Max Talbert's Duluth Timber Company was notified that an old warehouse was being torn down. Max and his crew salvaged the beam, along with many others from the building. And just this past October our own Chris Inman and Steve Hinderaker traveled to Duluth and photographed Max's crew sawing the beam into stock for the New England Settle featured on page 13 in this issue.

Rarely can woodworkers so thoroughly track the history of the wood they use, but Max Talbert and others like him are now offering virgin long-leaf pine, cypress and other species reclaimed from torn down factories and dredged up from rivers. Check out this issue's **Today's Wood** on page 23 for the story and some great sources of wood for future projects.

Speaking of projects, one of the most frequent questions we receive from readers is "where do I find that slide?" or "do you have a source for the hinges used in that project?" Starting with this issue your troubles should be over. Included with many of the project articles you'll now find a **Hardware Kit** that includes all those hard to find pieces you need to complete your project. In addition, our new **order form** offers twelve more hardware kits for some of the most popular projects from back issues. Obviously we won't be offering the kits on every project, but those that feature hardware that's a little harder to come by will, like this issue's workbench and finisher's cabinet. If you're interested, just enter the kit's item number on the order form between pages 12 and 13 and we'll rush your kit out — guaranteed satisfaction, of course!



Roger O'Hara, from Seattle, Washington, completed the cradle from issue 19 with little time to spare. The baby for whom it was intended, he told us, was two days late when he wrapped up the project. Now that's cooperation!

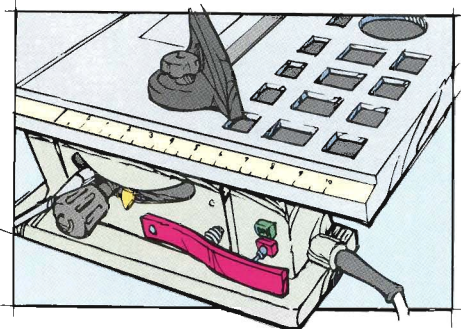
Another question we get from readers concerns indexing. We do show all our issues on the back cover and order form, and briefly list the contents. But it would be nice, many of you have pointed out, to have a complete index that covers all the departments as well as the projects. Well, reader Art Gumbus has taken care of that for us. His recently published **Guide to Published Woodworking Plans & Techniques** lists and categorizes over 5,000 woodworking articles from 10 major American & Canadian Woodworking Magazines —including Today's Woodworker. For a copy of this great reference tool send \$20.00 to **KnotWhole Publishers, 5629 Main Street-Putney, Stratford, CT 06497.**

Correction

Despite our checking everything countless numbers of times, occasionally an error still finds its way into publication. Recently, Mr. P.J. Bennedetti, a very observant reader, called to tell us about a problem with the full size inlay template for the **Music Box** project in issue 23 (September/October 1992). It turns out the pattern is distorted, and we apologize for this inconvenience. If you plan on building the music box, drop us a postcard and we'll send out the correction sheet immediately.

Larry N. Storken

Working In A Safer Shop



An Add-on Safety Switch

I added a safety "off" switch to my benchtop Makita table saw that's hard to miss. The bar sticks way out from the saw so I can hit it with my hand or thigh, and there's no need to look. With the center spring, the bar pops right back, ready for the next time.

*Max Hilberman
Malibu, California*

An Overlooked Eye Hazard

Take a moment to put your safety glasses on before attempting to scrape excess dried glue from a joint. Don't find out too late that this brittle residue tends to shatter in an almost explosive manner, flinging into the air a barrage of tiny particles that are hard, jagged and every bit as dangerous to the eyes as chips of wood.

*Danny Brunfield
LeSage, West Virginia*

Advice from the Eye Doctor

I always wear eye and hearing protection while working in my wood shop, and brush off my clothes before I leave. However, I never gave any thought to brushing the saw dust out of my hair until my oversight resulted in a trip to the eye specialist to remove a chunk of sawdust that felt as big as my fist.

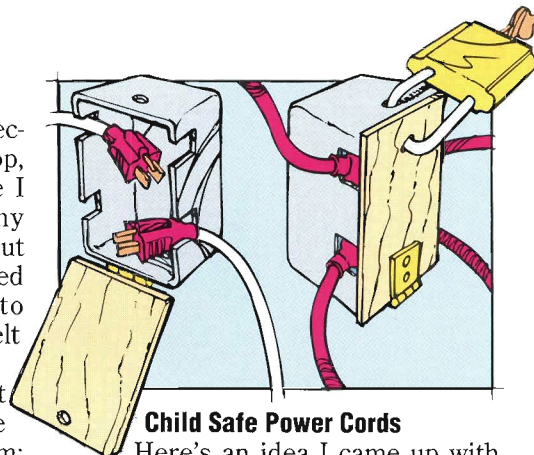
Later, while shelling out \$60.00 at the doctor's office, the nurse bestowed upon us this bit of wisdom: When an object becomes lodged in your eye, pull the upper lid over the lower lid. The lashes on the lower lid will catch on the foreign matter each and every time.

*Sandra Byrne
Sandpoint, Idaho*

Look Ma! No Hands

It's a good idea to install foot mounted switches on as many of your stationary power tools as you can. Mount the switches so that the up position turns on the tool and the down position turns it off. This way, you can safely turn on the tool even if both your hands are full or, if there's an accident, you can still turn off the tool easily.

*Hugh Foster
Manitowoc, Wisconsin*



Child Safe Power Cords

Here's an idea I came up with to prevent little ones from accidentally starting up power tools. Use a hinge to attach a flat metal cover plate to a metal outlet box. Cut notches in the edges of the the box for inserting the power cords, and drill holes in the box and cover to install a padlock. Now you can comfortably secure four plugs so they cannot reach an outlet.

*Vince Mendoza
Spooner, Wisconsin*

A Clear Path on The Shop Floor

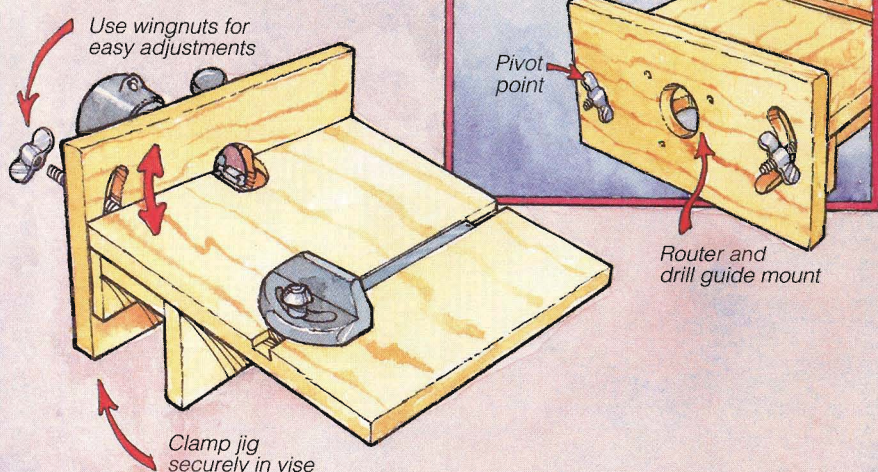
A shortage of floor space requires me to have three machines in the center of my shop. To eliminate the hazard created by all their cords, I secured two 4' long outlet strips to the ceiling over the machines. Now the cords are off the floor, where I won't trip over them.

*Robert O. Wendel
Marlboro, New Jersey*

PICK OF THE TRICKS

Recently, I needed to cut mortises on some 6' long boards. I usually do my mortising on a router table, but this time my boards were too long. It was time to build a mortising jig. I did lot's of research, taking bits and pieces of different ideas to create a jig for my needs. What I came up with was a mortising set up that can double as a doweling jig when coupled with a drilling guide. I made the jig with birch plywood and it mounts in my workbench vise.

*Jeff Williams
MCAS Beaufort, South Carolina*



How To Install A Library Catch

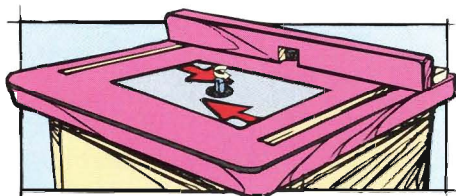
By Al Wolford

Changing Saw Blades

Unless a power tool is unplugged, changing blades is a great opportunity for disaster. But repeatedly unplugging the power cord will eventually cause plug connection problems and plug cord insulation damage.

My solution to this hazard is to mount a switched power strip in a convenient location on the power tool, and then plug the tool cord into the power strip. The power strip will act as a master switch in series with the power tool switch, providing the same level of protection during the blade changes as unplugging the tool altogether. Have you ever changed a blade with the plug connected?

*Jeff Hermann
Rockledge, Florida*



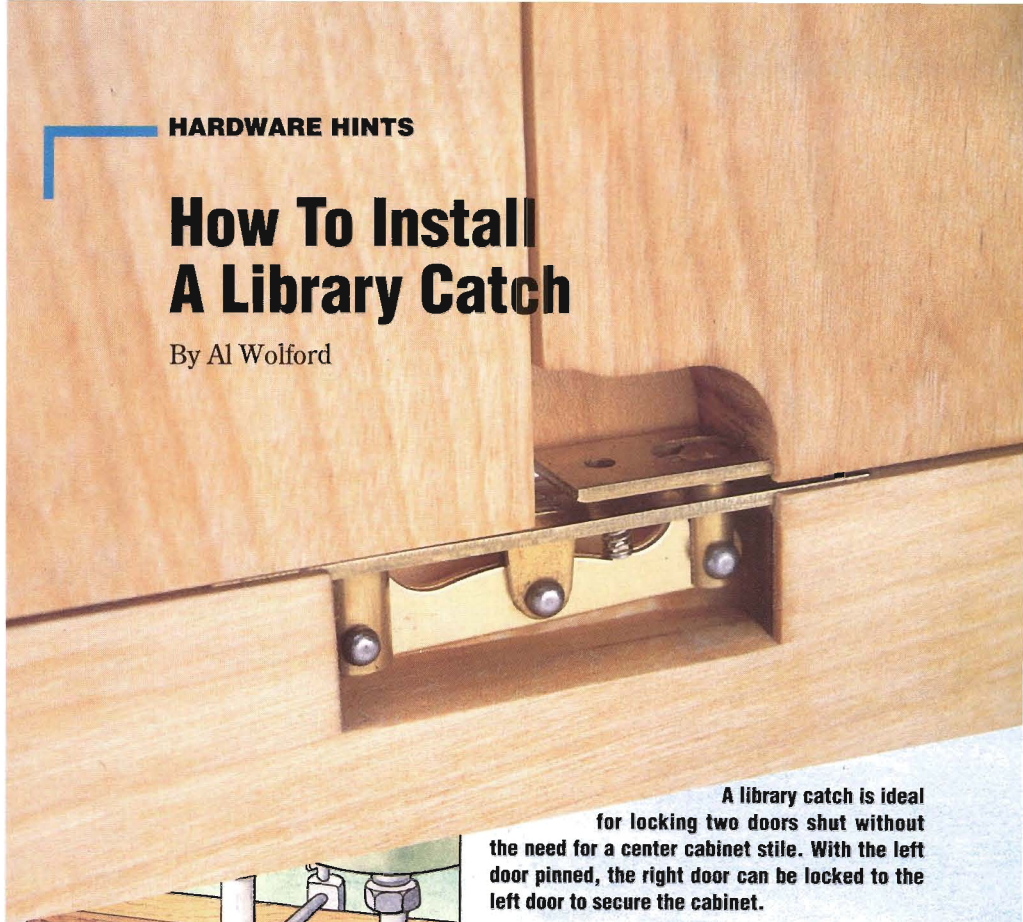
A Safer Router Table

In all the years that I taught Vo-Ed, I only knew of three accidents that required a trip to the hospital. Each of them was caused by feeding a piece of wood into a table mounted router in the wrong direction.

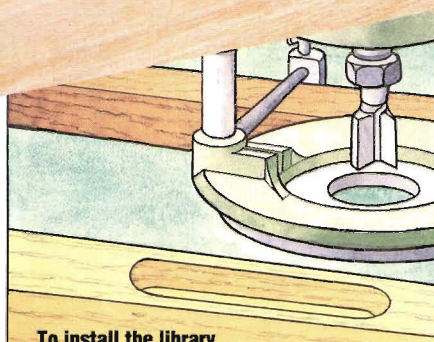
Here is my suggestion. Take some brightly colored acrylic paint and make large arrows indicating the feed direction on each side of the router table. This will catch the attention of the operator and make sure that the person feeds in the direction they should. The arrows may save many fingers, or at least many boards, from being drawn into the blade.

*James A. Johnson
Brunswick, Ohio*

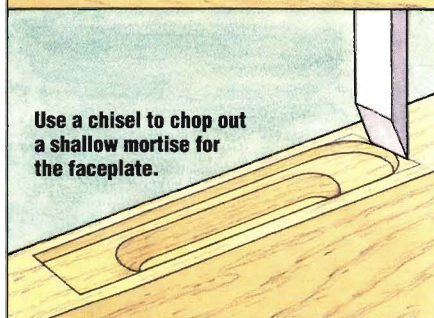
Today's Woodworker pays from \$35.00 (for a short tip) to \$150.00 (for each issue's "Pick of the Tricks") for all Tricks of the Trade published. Send yours to Today's Woodworker, Dept. T/T, Rogers, MN 55374-0044.



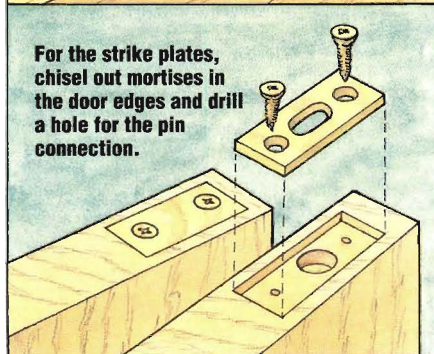
A library catch is ideal for locking two doors shut without the need for a center cabinet stile. With the left door pinned, the right door can be locked to the left door to secure the cabinet.



To install the library catch rout a deep mortise for the spring and arm assembly.



Use a chisel to chop out a shallow mortise for the faceplate.



For the strike plates, chisel out mortises in the door edges and drill a hole for the pin connection.

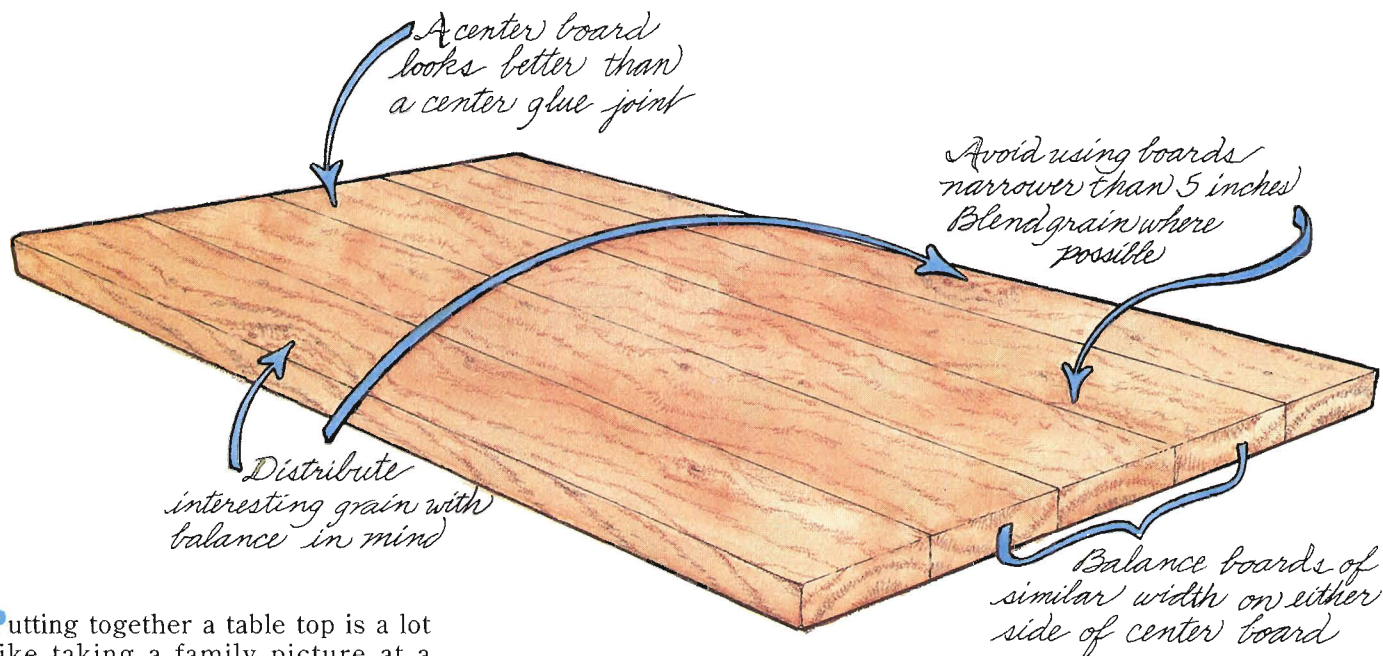
Securely closing double cabinet doors usually requires a center stile. If you're after a sleeker, more European appearance, however, you may want to investigate the venerable library catch. At one time, this sophisticated piece of hardware was very common on top-of-the-line furniture. Sadly, as fashions changed, it fell out of style. Today, with the growing popularity of frameless cabinets and furniture, the library catch is once again finding its way into woodworkers' shops.

This device provides a service similar to an elbow catch in that it holds one door secure so that the second door can be locked to it. You can mount the library catch at either the top or bottom of a door opening, although for maximum effectiveness I recommend installing one at both positions. The double bevel actuating bolt on the library catch allows its use on either door.

The one advantage over the elbow catch is appearance. The library catch is an unobtrusive, elegant alternative, and once installed a solid brass faceplate is all you see. Behind the faceplate is a strong steel spring that operates the arms and pins.

Guidelines for Making A Table Top

By Tom Caspar and Tim Johnson



Putting together a table top is a lot like taking a family picture at a reunion. In both cases you start with chaos and end up with an heirloom. If you think of the boards in your table top as individuals in a family portrait it might help put a project in perspective. Like family members, each board has a unique personality. Your job is to organize them to look their best. Then, just like clicking the camera shutter, you freeze the boards for eternity in a glue up—you don't want to live with a hasty arrangement that won't wear well with age.

A successful table top has two qualities: it must be pleasing to look at and it must remain stable. Accomplishing this requires an artistic eye and good craftsmanship. We've developed a set of guidelines for selecting and arranging boards in a table top. These rules aren't written in stone, and you might disagree with the look we're after, but at the very least you'll become familiar with all the aspects of the challenge.

It's also important to mention that not all boards belong in a table top. In a stack of lumber, each board has characteristics that make it suitable for different uses in a project. Woodworkers must learn to be harsh critics so as to avoid some boards no matter how good they look on the surface.

1. Select Good Lumber

This is the one rule you shouldn't bend. Choose boards that are likely to remain flat and straight. Look at the ring pattern at the end of a board. The more the grain lines curve, the greater the likelihood the board will cup. Wide boards are often tempting to use, but be careful—rip them in half or thirds if they come from too near the center of the tree, and separate them in the panel arrangement. Predicting wood movement is fundamental to making a successful table top. If you're interested in reading up on this topic, we recommend Bruce Hoadley's *Understanding Wood* (available from Taunton Press; 800-926-8776).

2. Use Boards With Interesting Grain

Perfectly symmetrical or straight grain can be monotonous. Small knots, color streaks, squirrely grain, and other defects can be pleasing to look at if distributed throughout a top. The top should not look like bookmatched plywood. Avoid using widely spreading grain patterns at the end of a board. Don't cut or join boards too near a knot or crotch.

3. Plan Ahead

Unless you're working on a pretty small table, don't use boards narrower than 5". These tend to make a top look like it's been chopped into little pieces.

4. Plane Carefully

Plane each surface of a board the same amount. Stop planing when your boards are 1/8" too thick, then stack the boards with stickers so all sides are equally exposed to the air. After three days see if they remain true.

5. Rip For Effect

Choose boards with similar widths, keeping the differences under two inches. A top is less interesting when all the boards are exactly the same size, but widely varying board sizes are distracting. Balance similarly wide boards on either side of the center board to build up a symmetrical pattern.

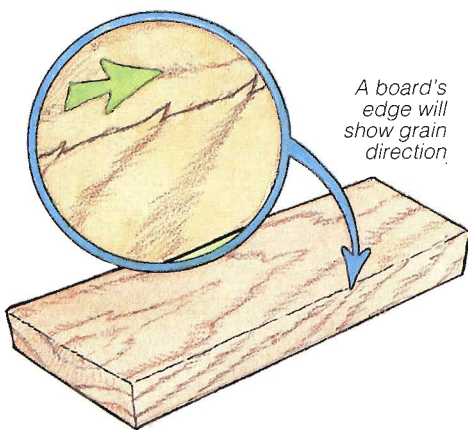
6. Odd Is Better Than Even

Always use an odd number of boards. The eye is usually drawn to the center of a panel, and a center board looks better than a center glue joint.

Arrange interesting areas in a balanced, random pattern. Don't cluster knots or swirly grain at one end of the table top or in the middle. Consider disguising transitions from board to board by placing similar grain patterns together.

Frame a top with straight grained boards along both outside edges. Run out grain at an edge carries the eye with it.

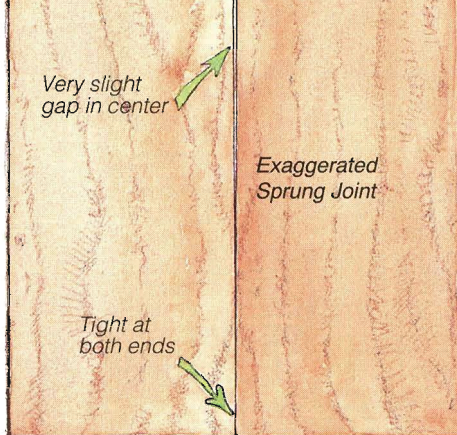
Check for color differences —neighboring boards shouldn't be dramatically different in color. Wet boards with water, alcohol or mineral spirits to get an idea of their finished appearance. Think twice before using sapwood or other distinctly different features.



Try to line up all the boards so the edge grain runs the same way. If you're successful, you'll avoid tearing out the wood when planing the top by hand.

This is important. Walk away from your best arrangement for a day or two, then come back later to have a fresh look.

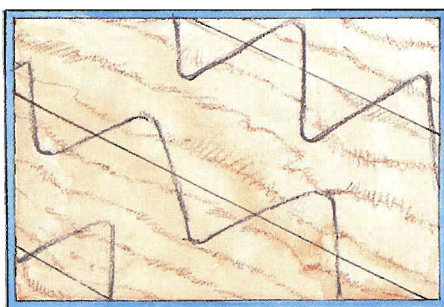
For a table top, butt joints are fine. Biscuits, dowels, or splines will help align a top, but they will not make a well fitted joint much stronger.



Long joints should be sprung. This means that the edge will be planed or jointed in a slightly hollow manner. Two sprung boards will touch at their ends but have a minute gap in the middle. Since boards lose moisture from their ends faster than out their sides, unsprung joints can separate at the ends over time. You'll see this on many antiques. Check for tight joints before you glue.

Don't try to glue up too much at once. Thick, unsightly glue lines result when there is too much open time. Consider gluing the top in halves. Be sure to apply glue completely to all edges about to be joined.

Clean off squeezed out glue when it's rubbery. If you wait until it hardens you may pull off slivers of wood. Later, wet the joints to reveal any missed glue.



Draw a zig-zag line down the length of each joint, then plane the panel by hand. When all the lines are removed the joints should be flush and any invisible glue puddles should be eliminated. Holding a light at a low angle will reveal any defects.

Tom Caspar and Tim Johnson are professional furniture builders in Minneapolis, Minnesota.

Like so many other things in life, woodworking is not always cut and dried. One controversy that divides many woodworkers has to do with orienting the end grain patterns in a panel made up of several boards, such as in a table top.

All of us know that wood moves with changes in seasonal moisture. Along with the expansion and contraction of the wood often comes some warping, which usually shows as a slight cupping of a board. The challenge for woodworkers is planning for this tendency of the wood to cup so that a panel will remain as flat as possible.



The adherants to the first school of thought might be called the “rippers.” These woodworkers alternate the end grain pattern of every board so that half the boards have their bark side facing up and half have their pith side facing up. Typically, a board cups toward its bark side. In this panel configuration, as every board warps slightly, each one in the opposite direction from the one next to it, the panel looks like a series of ripples and the overall effect is minimal. Holding the panel with table top fasteners or breadboard ends will limit the distortion, but not eliminate it.



The “big wave” proponents, on the other hand, orient all their boards with the end grain repeating in the same direction. As the boards cup in this panel, the whole piece will distort into a uniform bowl shape, which can be controlled with just a few fasteners. The panel then feels smooth even if it's not perfectly flat.

Both theories are right, but neither is foolproof. It's probably a sign that no matter how hard we try, we can't control everything, which brings up yet another theory: a fair number of woodworkers don't follow either rule and choose their boards for the best looking arrangement regardless of grain direction.

Obviously, there's no single answer.

Building A Workbench On A Budget

Build yourself the ideal work center for about \$300.00.

By Rick White

Every woodworker dreams of owning a classic European workbench. The beautiful maple top and elaborate shoulder vise symbolize the essence of fine craftsmanship. But how many of us look at these benches and end up saying "it's just too nice to use in my shop." And when we see the cost of building such a bench we pass on the project altogether.

On the other hand, settling for a barely adequate bench is frustrating. Without a vise you can't hold your workpiece, and without a heavy, solid surface you can't expect to strike a chisel without having it bounce around and damage your wood.

Being caught between a rock and a hard place over a workbench is no fun. It is, after all, the heart and soul of a shop. With this dilemma in mind, I set out to build a completely functional workstation for around \$300.00. About half of that cost was for two new products from The Woodworkers' Store.



The new Veritas vise has two screws connected by a bicycle chain that overcomes the racking problem commonly experienced with traditional vises. The chain drive can be quickly released to operate the screws independently, making it possible to cant the jaws a little when holding stock out near the edge of the bench. The T-slot system is very flexible and, as you'll see, lends itself to dozens of homemade accessories.

The first thing a bench should offer is a sturdy surface, and this one fills the bill. When I recently surfaced an oak board with a hand plane the bench didn't budge an inch. The hardboard top makes a sound work surface, and since it's screwed down, it's easy to replace when it's worn or damaged. There's plenty of room for handling large panels, and I can clamp wood for sanding, surface and edge planing, edge and panel routing, joint cutting, and up to this point, any operation I can think of. The completed bench is heavy, which is perfect for deadening the blows of a pounding mallet.

In addition to the basic bench, I later added a cabinet to the leg structure. Although this wasn't part of my original project, spending an additional

\$50.00 for one more sheet of plywood and 3 pairs of drawer slides has made better use of this otherwise empty space. An exploded view on page 12 will guide you through this addition if you want to go the extra mile.

Building The Base

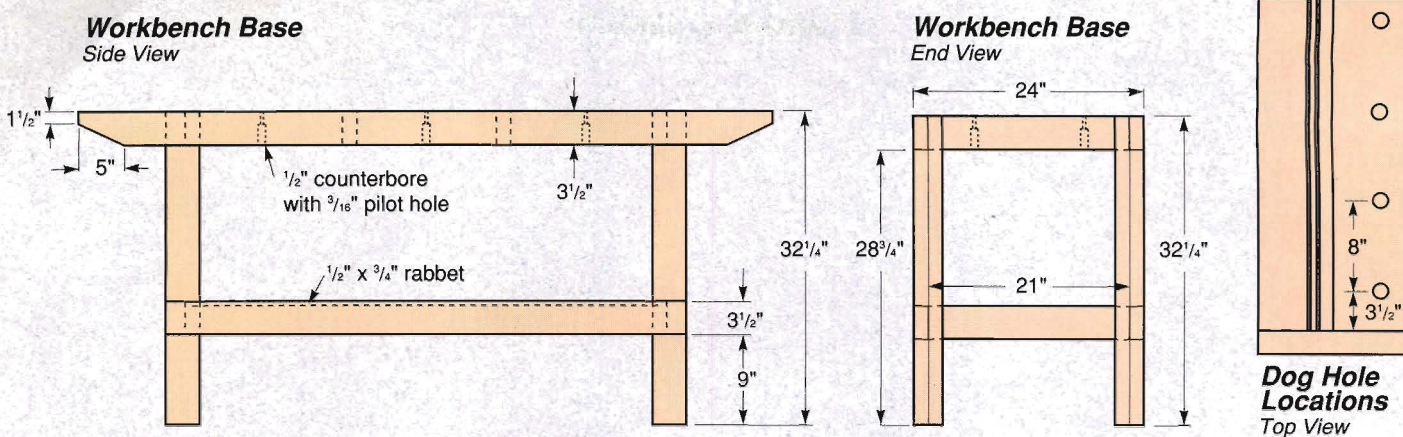
The base of the workstation is made with standard 2 x 4 stock, and most of the joinery is done with lap joints and screws. All the cutting was done with a table saw and, for this phase of the project, the only other tool I used quite a bit was a drill.

Begin by gluing up 2 x 4 stock for the legs (pieces 1) after cutting the pieces a couple inches longer than the material list lengths. Use two pieces of lumber for each leg, spreading yellow glue on both mating surfaces to get a perfect bond, then clamp the pieces together. Clean off the excess glue from each lamination before it hardens.

Once the legs are removed from the clamps go ahead and cut all the base pieces to length. The side aprons (pieces 2) and top supports (pieces 3) give the top much of its rigidity and help keep the base from racking. The side stretchers (pieces 4), the end



The basic T-slot system opens up all sorts of jig possibilities for holding a project while drilling, routing, planing, sanding, or cutting at the workbench.



aprons (pieces 5) and end stretchers (pieces 6) complete the base, creating great stability and adding substantial weight to the bench.

Lay out the lap joint locations on the legs as shown above and in the lap joint detail on page 11. Keep in mind that all the leg joint positions are essentially the same, but as with all table legs, each one has to mirror the leg across from it. To cut the laps, install a 3/4" dado blade in your table saw and raise the blade 1 1/2". With the aid of your miter gauge take several passes to remove the wood in each joint area.

Now lower the dado blade to 3/4" and layout the dadoes on the side aprons for joining with the top supports (see elevation below). Cut each dado with a couple of passes over the blade. Next, cut a 3/4" wide

by 1/2" deep rabbet along the top inside edge of each side stretcher. Stop the rabbets 1" from each end of the pieces. To protect your fence during these rabbeting cuts, be sure to clamp on a wood face.

Before assembling the base take care of two more small details that are easy to do now while other frame parts aren't in the way. First, drill 1/2" counterbores with 3/16" pilot holes in the bottom edge of the four aprons and two top supports (see elevation drawing above). These holes will be used later for screwing down the bench top. The second detail is trimming the angles on the ends of the side aprons, as shown above. The best tool for cutting the angles is a hand held circular saw, but a saber saw will work almost as well. After making the cuts, smooth the edges with a belt sander.

Assemble the workbench base in two stages. First glue and screw the side aprons and stretchers to the legs, then join these structures with the end aprons, end stretchers and the top supports. Make sure that the two side stretcher rabbets face each other on the base assembly. Clean up any glue squeeze out and sand the base to remove the sharp edges.

Since my shop floor is anything but level, I installed a leveling glide (pieces 7) in the bottom of each leg. To install these optional glides, flip the base upside down and drill a 1/2" diameter by 2" deep hole in the center of the leg bottoms, then secure the threaded plates included in the package and screw in the levelers.

Moving Up To The Top

The top is basically a three layer sandwich that's banded with thick maple rails. First, two panels of fir plywood (pieces 8 and 9) are laminated together to make the top stable and heavy, then above the plywood a layer of remov-

able hardboard (piece 10) is added to take the dings and dents suffered by any workbench. When the hardboard becomes too scarred from working at the bench, remove it and use it as a template for making a new one. To complete the top assembly, maple rails (piece 11) are attached to the plywood, giving the top an attractive edge and a durable surface for anchoring the T-slot tracks (pieces 15).

Start building your top by cutting the two plywood panels to size and gluing them together. Use a brush or roller to spread yellow glue over both mating surfaces, then center the smaller panel on top of the larger one. Next, in order to keep them from slipping out of position, drive a brad into the assembly at each corner of the smaller panel. Clamping the plywood requires consistent pressure throughout the lamination, so make sure you've pre-cut a bunch of curved batten boards to apply pressure in the middle of the panels (See Figure 1).

Rip and crosscut your maple to size for the rails, then drill 1 1/2" deep holes in one edge of each piece following the dog hole elevation drawing above. After drilling the 1" holes, install a 3/4" dado blade in your table saw to cut a 1" deep by 2" wide rabbet in the other edge of each rail (see

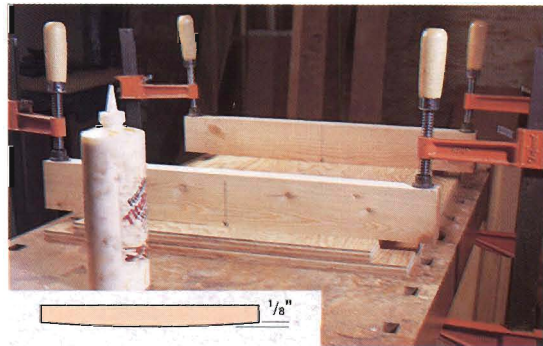
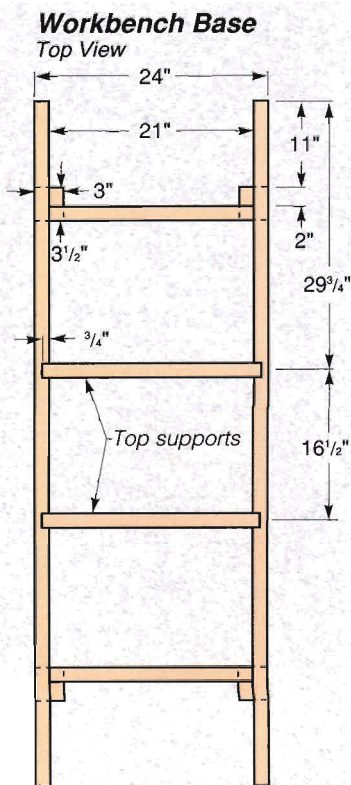
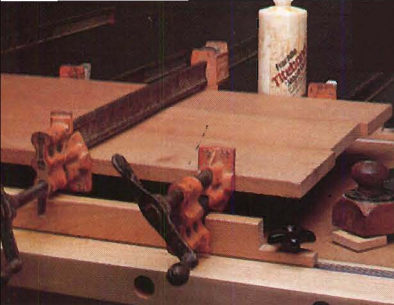
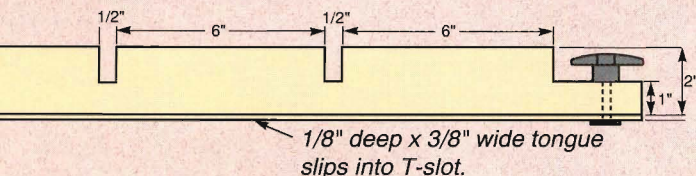


Figure 1: Batten boards, which have a curve of about 1/8" on their bottom edge, are used to apply pressure at the middle of a wide panel assembly.



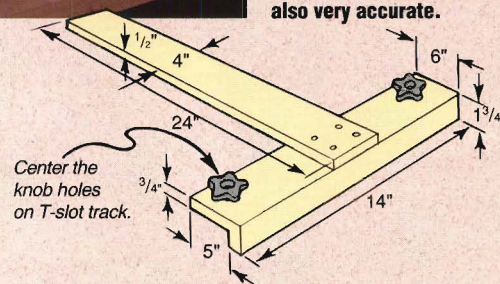
The clamp holding jig steadies my bar clamps on the bench top while I adjust boards in a panel assembly. This allows me to work at a comfortable height and spares me from tipping clamps during an assembly.

Clamp Support Jig



My favorite workbench invention is the T-square jig. For routing multiple dados across a panel it is unsurpassed for speed and, since everything works off the edge of the bench, it's also very accurate.

T-Square Jig



elevation drawing below). Make several passes to complete each rabbet, being sure to clamp your protective wood face to the saw fence.

The maple rails should now be glued and screwed to the upper plywood panel. I recommend clamping the rails without glue to the plywood first, and drilling countersunk pilot holes through the plywood into the rail—I drilled seven evenly spaced holes along each rail. When you've finished drilling, release the clamps, spread glue in the rail rabbets, and reclamp the assembly. With everything in place, drive the screws, then clean up any glue squeeze out, especially along the inside edge of the rail.

The final piece to fit into the top is the tempered hardboard. Cut the sheet to fit between the rails as snugly as possible, then drill countersunk pilot holes along its edges for the screws that will hold it to the plywood.

As I mentioned earlier, one of the most important features on this bench is the T-slot system. The effi-

cient use of this bench really revolves around jigs made with a T-bolt and a knob clamp. The T-bolt slides in a metal track that has been secured to the bench with screws, then the knob on the bolt is tightened to hold the jig in place. The track will last through a lifetime of constant use.

Installing the metal track requires a simple 13/16" wide by 3/8" deep groove. Make sure the groove depth is accurate, for if it's too shallow the track will stick up into the work surface, and if it's too deep the accessories will pull the track out of the groove. Layout the track grooves on the maple rails as shown in the elevation below, then chuck a 1/2" straight bit in your router and attach a straight edge guide. Now rout one 3/8" deep pass for each track, then reset the edge guide to make a second pass, widening the grooves to 13/16".

Since the track comes in 40" lengths, this bench requires 4 pieces to make up the two parallel slots. To secure the tracks, set them into the

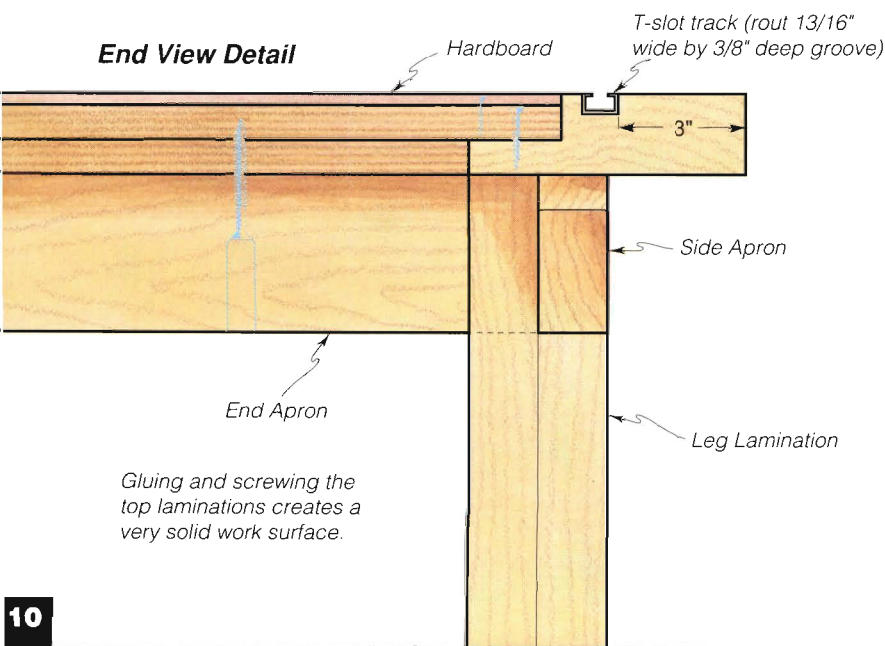
grooves and drill 5/32" diameter holes every six inches. Next, drive a #6-1" pan head screw (pieces 16) into each hole. If the track overhangs the end of the bench, cut the excess off with a hacksaw.

Bench Top Details

Drilling dog holes in the bench top requires a great deal of accuracy, so I made a jig to help me during this operation (See Figure 2 on page 12). The idea behind the jig is to use one dog hole to establish the position of the next hole. To ensure accuracy I incorporated a portable drilling guide into my jig. Since the jig is guided by the maple rails, I have two fence positions, one for the right hand row of holes and one for the left hand row.

Build the jig, then set it against the bench top to drill the first hole as shown in the dog hole elevation on page 9. Drill the hole, then use a center punch and the forward hole on the jig to locate the next hole. Now move the jig forward until you can

End View Detail

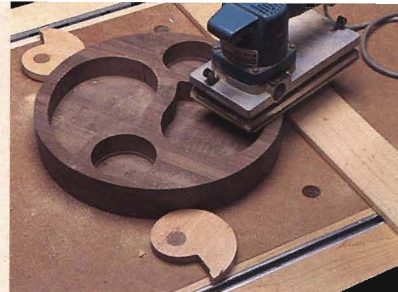


MATERIAL LIST

	T x W x L
1 Legs (4)	3" x 3 1/2" x 32 1/4"
2 Side Aprons (2)	1 1/2" x 3 1/2" x 76"
3 Top Supports (2)	1 1/2" x 3 1/2" x 22 1/2"
4 Side Stretchers (2)	1 1/2" x 3 1/2" x 54"
5 End Aprons (2)	1 1/2" x 3 1/2" x 21"
6 End Stretchers (2)	1 1/2" x 3 1/2" x 21"
7 Leveling Glides (1 set)	Heavy Duty
8 Top Panel (1)	3/4" x 22" x 80"
9 Bottom Panel (1)	3/4" x 18" x 80"
10 Hardboard (1)	1/4" x 22" x 80"

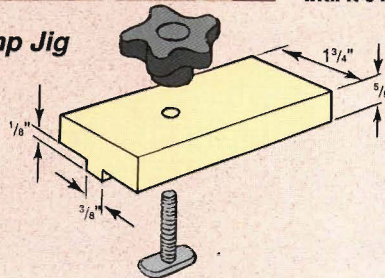


I have two sets of toggle clamps. One set clamps in line with the T-slots and the other set at right angles to the slots. Between them I can hold projects going across the bench or parallel with it's length.

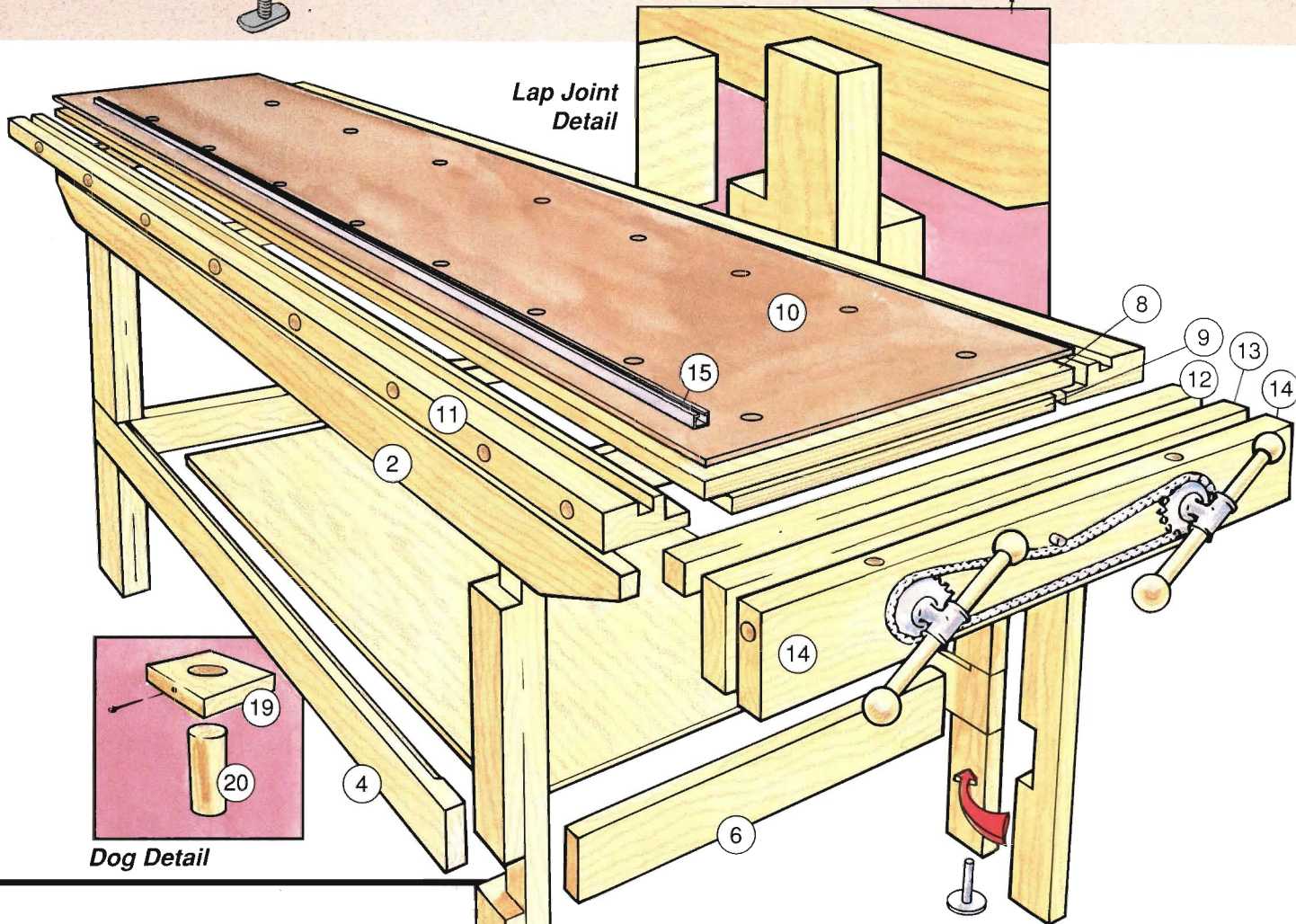
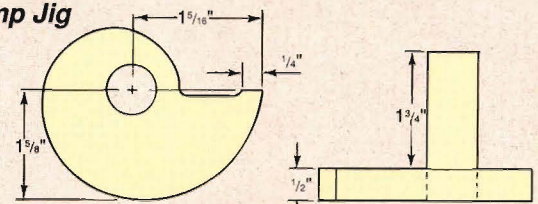


When sanding panels, regular clamps often get in the way. To avoid this problem I made a set of cam dogs and a T-slot bar. Since the bar is adjustable, it can make up the distance between the dog holes.

Toggle Clamp Jig

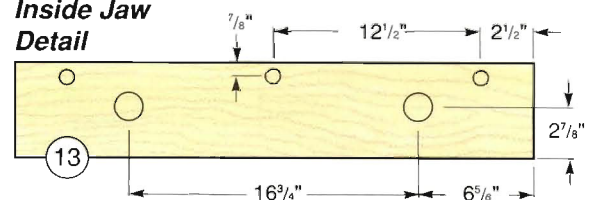


Cam Clamp Jig



Dog Detail

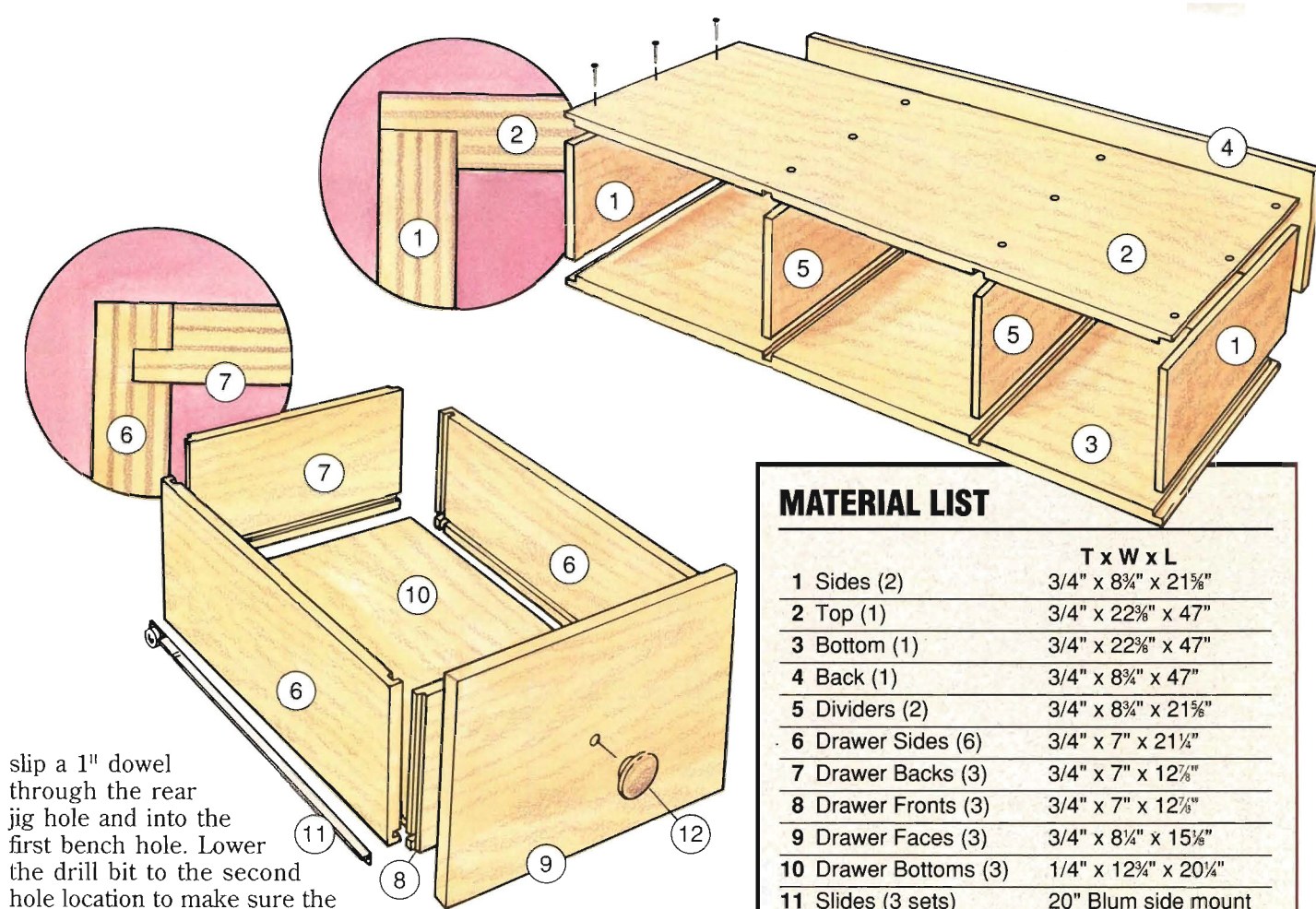
Inside Jaw Detail



	T x W x L
11 Maple Rails (2)	1 1/4" x 6" x 80"
12 Endcap (1)	1 1/4" x 1 1/4" x 30"
13 Inside Vise Jaw (1)	1 1/4" x 5 3/4" x 30"
14 Outside Vise Jaw (1)	2" x 5 3/4" x 30"
15 T-slot Tracks (4)	13/32" x 13/16" x 40"
16 Screws (30)	#6-1" pan head
17 Lag Bolts/Washers (3)	3/8" x 2 1/2"
18 Screws (15)	#12-2 1/2"
19 Dog Heads (4)	1/2" x 2" x 2"
20 Dog Dowels (4)	1" Dia. x 1 1/2" long

Economy Workbench Hardware Kit

A hardware kit is available for this project. It includes 1 Veritas twin screw vise, 1 set of leveler glides and 4 sections of T-bolt track. Item # 88379 (use order form)\$149.95



MATERIAL LIST

	T x W x L
1 Sides (2)	3/4" x 8 3/4" x 21 1/2"
2 Top (1)	3/4" x 22 3/4" x 47"
3 Bottom (1)	3/4" x 22 3/4" x 47"
4 Back (1)	3/4" x 8 3/4" x 47"
5 Dividers (2)	3/4" x 8 3/4" x 21 1/2"
6 Drawer Sides (6)	3/4" x 7" x 21 1/2"
7 Drawer Backs (3)	3/4" x 7" x 12 7/8"
8 Drawer Fronts (3)	3/4" x 7" x 12 7/8"
9 Drawer Faces (3)	3/4" x 8 1/4" x 15 1/8"
10 Drawer Bottoms (3)	1/4" x 12 3/4" x 20 1/4"
11 Slides (3 sets)	20" Blum side mount
12 Knobs (3)	1 1/2" diameter

slip a 1" dowel through the rear jig hole and into the first bench hole. Lower the drill bit to the second hole location to make sure the bit spur goes right into the punch mark. Drill the second hole and use the center punch to mark the third hole. Continue this procedure for the rest of the dog holes. When you're done with the right hand row, switch the fence and drill the left hand row of holes. The more accurate your dog holes are, the better off you'll be when using your bench jigs.

On the back end of the bench top, the T-slots are left exposed so you can slip your fixtures and jigs in and out. On the front end of the bench, however, you must install an endcap.

Cut the endcap (piece 12) and the vise jaws

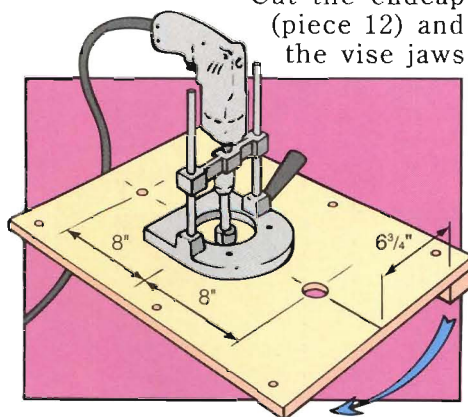


Figure 2: A drilling jig ensures accurate dog holes, just be sure to switch the fence for each row.

(pieces 13 and 14) to size, then follow the **exploded view detail on page 11** to drill their mounting and vise screw holes. Clamp the endcap into position against the bench top and extend the pilot holes into the maple rails and the plywood lamination. Now secure the endcap to the bench with glue and screws (pieces 18), extend the pilot holes for the inside vise jaw and secure it with lag bolts and washers (pieces 17).

At this point, the bench top and the base are ready for assembly. Square the top on the base, then clamp the two together. Now reach under the bench to extend the pilot holes in the aprons and supports. Use #12-2 1/2" screws (pieces 18) to secure the assembly.

Some Final Thoughts

Make the bench dogs (pieces 19 and 20) as shown in the **exploded view detail drawing** and, if you don't plan to build the drawer cabinet, cut a plywood panel to fit between the side stretchers in the base for a storage shelf. If you plan to build the drawer cabinet, follow the drawings shown above.

The vise comes with instructions, so

I won't go into the steps for its installation. However, you do need to make handles for the vise, and the holes for the handles are inconveniently sized at 1 1/8" in diameter rather than the common dowel size of 1 1/4". After a search, I phoned a mail order source called Woodworks (800-722-0311) to order a 1 1/8" birch dowel. I cut the dowel to length, then flattened one side on four 1 1/2" wood balls, which I secured to the ends of the dowels with dowel screws.

The jigs I developed for the T-slot system are shown across the tops of pages 10 and 11. These are a small sampling of what's possible with this system, and I'm sure that with time I'll have many more. Once the jigs were made, I sprayed the bench with lacquer and went to work. So far I'd say my moderately priced bench is paying off. My checkbook isn't as light as it would have been if I had built a European type bench, and I've gained a lot more flexibility for holding my work.

Rick White, a professional woodworker, serves on the editorial advisory board of Today's Woodworker.

Traditional New England Settle

Equally at home next to the fireplace or in the entryway, this colonial bench will warm your home with its old world charm.

By Chris Inman

In colonial times, homes were drafty places, and a roaring fire was the only means of taking the chill off a winter evening. To get the most out of that roaring fire, colonists often placed their settles in front of the fireplace. The high, solid backs acted like walls, effectively reducing the size of a room and concentrating the warm air in a smaller area. Even though the settle wasn't very comfortable, the premium on warmth made it the most popular seat in the house.

Of course we have furnaces today, so settles aren't necessary. However, their sentimental warmth continues to make a room more inviting, and they can still serve a practical function. Near a hearth, a settle creates a cozy nook for reading and its chest is ideal for storing a few extra logs. Placed near an entryway, a settle serves as a seat for changing boots and storing mittens, scarves and hats. For a real treat, line your chest bottom with aromatic cedar and use it in a bedroom to hold spare blankets and linens.

The wood used in this settle has an interesting history and provides another link with our past (see *Today's Wood* on page 23). Carpenters of the colonial era used heart pine for projects of this sort, a wood that is largely unavailable today. But with our limited wood resources, it has become economical to salvage lumber from deteriorating old buildings. The heart pine in this settle was once a warehouse beam, and the tree it came from was probably harvested in the mid-19th century. If you like building reproductions of traditional country furniture, this is one of the best woods to choose.

Building the settle requires 72 board feet of 3/4" thick stock and 3 board feet of 3" x 2 1/2" material. For some parts in the chest, you'll need 7 board feet of a secondary wood like poplar. The only hardware required is a 36" piano hinge. You should count on spending about 25 hours of shop time to build your pine settle.





Figure 1: For protection, clamp a wood face to your fence while cutting the tongues with a 3/8" dado blade raised 1/4".

Getting Underway

Start your project by making panels for the sides (pieces 1), the seat (piece 2) and the bottom (piece 3). Select nicely matched pine stock for the sides and seat, and use poplar for the bottom. Cut the boards a few inches longer than the lengths in the material list and, once you have the boards arranged, draw a big triangle across each panel to use as an alignment reference when gluing them together. Now joint the boards and glue up the panels, making sure to alternate the clamps to keep the panels flat. When the excess glue sets to a rubbery consistency, shear it off with a chisel.

While your panels are drying, turn your attention to cutting the tongue and groove boards for the settle's back (pieces 4, 5, and 6) and front (pieces 7, 8 and 9).

First rip the stock to width, then

cut the pieces a little longer than their finished lengths. Since you're set up for ripping, cut stock for the crest rail (piece 10) and the back rail (piece 11), then tilt your blade 30° and bevel the top front edge of the back rail. Set these last two pieces aside for now.

On tongue and groove joints, it's always best to form the grooves first, then cut the tongues to fit. Set up a 1/4" dado blade in your table saw, raise it 3/8", and adjust your fence to center the blade on the edge of your pine stock. Set aside the boards for the left end of the bench (pieces 4 and 7), then plough a groove into one edge of the rest of the pieces.

To cut the tongues, install a 3/8" dado blade and raise it 1/4". Clamp a wood face to the fence for protection (See Figure 1), then adjust the fence so the face barely touches the blade. Cut a tongue on some scrap pine and test its fit in a groove. If the tongue slips in easily without sloppiness, the fit is perfect. Now set the right end stock aside (pieces 6 and 9) and cut tongues on the rest of the boards.

Cut all the boards to length, then arrange them in order and mark their front faces. All the back boards meet the crest rail with a shiplap joint rather than a tongue and groove. In this particular situation, a shiplap is better since it leaves more material on the backside of the joint, where pressure from a person sitting in the settle is concentrated. To cut the shiplaps, install a 3/4" dado blade and raise it 3/8". Once again, move the fence so the wood face just barely touches the blade, then make your cuts in the top, back side of each board (See Figure 2). Once the shiplaps are completed, use the same set up for rabbet-

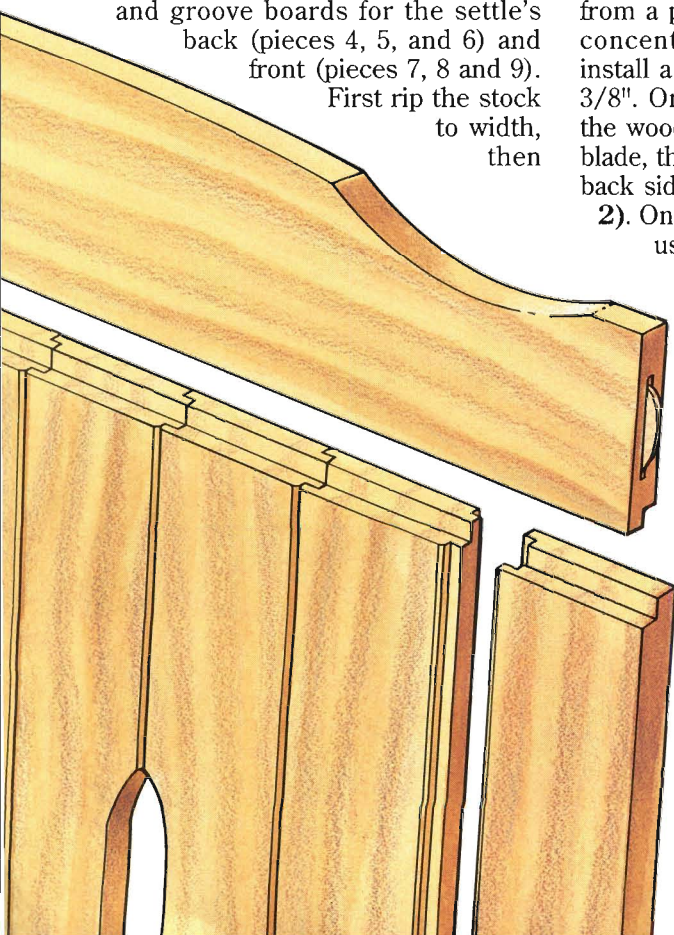
ting the bottom front edge of the crest rail (piece 10).

For decoration, the shoulders of each tongue and groove board are beveled. Tilt your standard saw blade 45° and shift your fence to the outboard side of the tilted blade. Keeping in mind that you'll have to adjust the fence for the various board widths, trim a 1/8" bevel on each edge with the blade set low so it won't cut into the tongues.

Back To The Side Panels

Once the glue in the sides, seat and bottom is dry, remove the clamps to plane the panels flat, then cut them to length and width. Now turn to routing the various joints in the sides. Layout the dado, groove and rabbet locations as shown in the elevation at right, then set up a 3/4" straight bit in your plunge router. Make the jig shown in Figure 3, then align the jig with each dado layout and rout the joints 3/8" deep. Next, add a straight edge guide to your router and cut the grooves and rabbets.

The side panels must be tied to each other with strong joints, and these are in part provided by the crest rail and back rail. To add more rigidity, support rails (pieces 12) should be mounted inside the chest to reinforce the seat and bottom. Rip poplar stock for these four pieces, then crosscut all the rails to length. Biscuit joinery is ideal for securing the rails to the sides, but if you don't have a biscuit joiner, use dowels or screws and plugs instead. Layout the biscuit locations in the ends of the rails and on the side panels (make them dowel or screw hole locations if you prefer) and cut the slots in the sides and the ends of the rails for #10 biscuits (see short article on page 16).



This view from behind the settle shows the shiplapped joints as well as the tongue and grooves between each board. The crest rail should not be shaped until after the rabbet is cut along its bottom edge and the biscuit slots are cut in its ends.

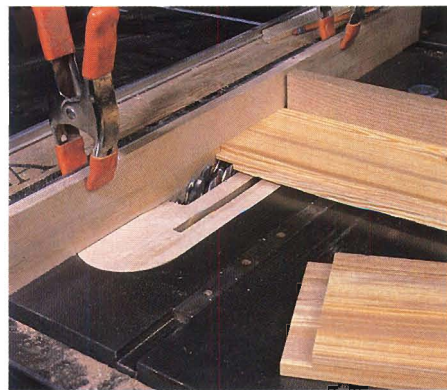


Figure 2: For the shiplaps, use a 3/4" dado blade raised 3/8", and make the cuts with the help of your miter gauge. Keep the scrap wood face clamped to the fence during this operation.

When all the biscuit slots are completed, cut the sides and crest rail to shape. Cut out the **full size patterns** of the upper side panel, the side base detail, the side vent openings and the crest rail from the insert between pages 12 and 13, and trace these patterns onto each piece (use the **elevation below** to position the vent openings). Drill a 1/2" diameter entry hole at the midpoint of each vent, then remove the waste with a saber saw. Next, use the saber saw to cut the outside shape of the panels and the crest rail.

As you could probably guess, the chest lid is cut directly out of the seat panel. Layout the lid as it's **shown in the elevation drawing below**, then carefully make the crossgrain cuts with a saber saw. Next, thread a coping saw blade through the kerf at one

back corner of the lid, reclamp the blade to the saw frame, and cut along the back line for an inch. Withdraw the coping saw and insert the saber saw blade to complete the lid cutout.

At this point, you may want to enlist some help to dry assemble the frame. If all goes well, proceed with the permanent assembly. Yellow glue might be the adhesive you reach for first, but because of the number of pieces in this assembly, a better choice is white glue, which has a longer open time.

Spread glue in the side panel dadoes for the seat and bottom, in all the biscuit slots in the sides and the ends of the six rails, and on the edges of the support rails where they contact the seat and bottom panels. Draw the frame together with clamps, and be sure to check that the support rails are square to the panels.

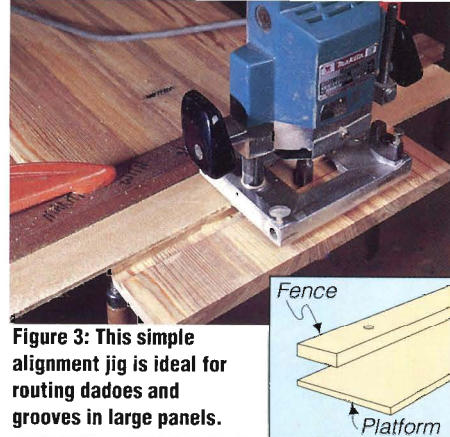
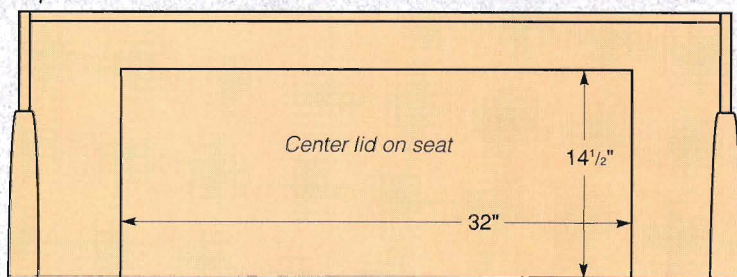


Figure 3: This simple alignment jig is ideal for routing dadoes and grooves in large panels.

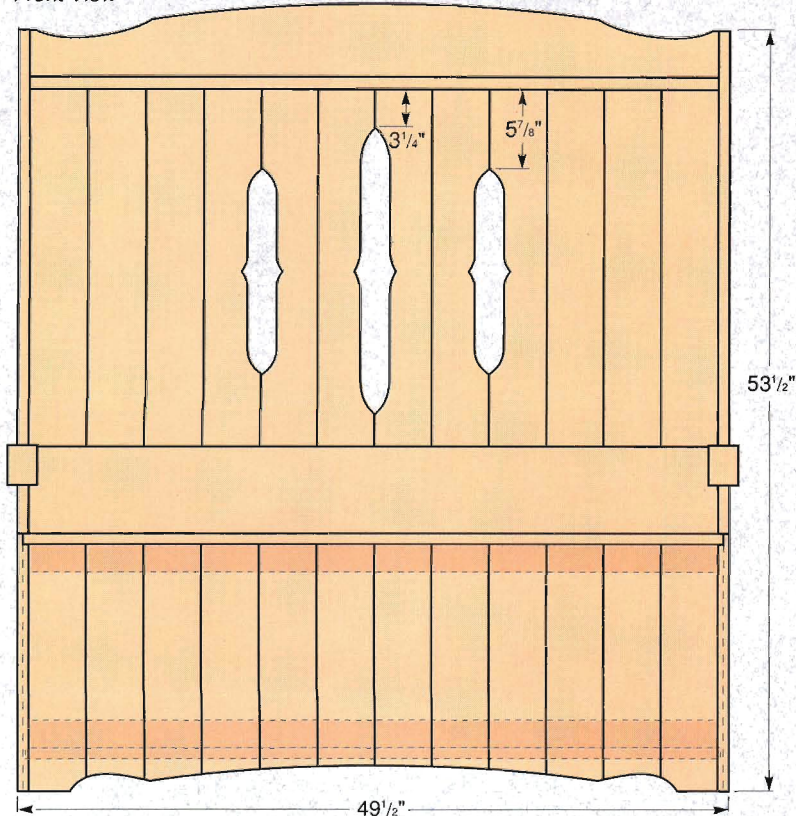
Making The Arms

Cutting the tapered groove in the bottom of each arm (pieces 13) is a two step process. Begin by cutting out the arm's side view from the **full size pattern insert** (cut along the solid line), then trace the pattern onto the side of the arm stock. Band saw the bottom edge of each arm and layout

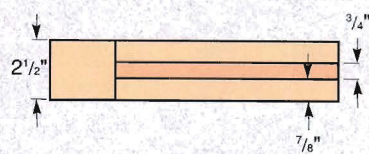
Top View



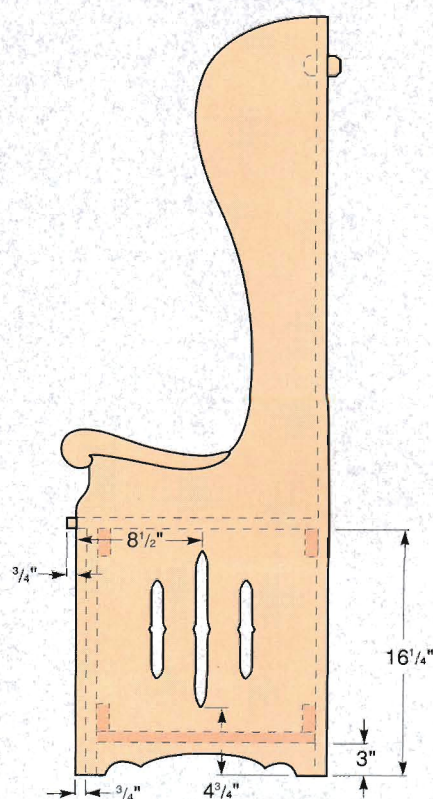
Front View



Arm Detail
Bottom View



Side View



Biscuit Basics



1 Layout the biscuit slots by first marking the center of the rails, both on their width and thickness, then position the rails on the sides and transfer these marks.



2 Adjust your biscuit joiner fence to center the blade on the edge of the stock, then align the joiner with the mark at the ends of each rail and cut a #10 slot.



3 Set your fence for 90° slot cutting, then align the centering notches in the face plate with the layout marks on the panel and plunge the cutter in the wood.



4 Make sure glue gets into the slots by using a bottle with a biscuit tip applicator. Unlike normal tips, this one will spread glue evenly on the slot walls.

the grooves (see elevation on page 15). Now rout the groove walls with a 1/2" deep slot cutting bit. Align the bit with the groove layout and make a pass to define one wall, then flip the arms over to rout the second wall (See Figure 4). Be sure to stop the cuts before reaching the arm knobs. Now chisel the remaining waste from between the slots and extend the grooves into the crease under each arm knob (See Figure 5).

Look at the arm pattern again and you'll notice a dotted line. This line represents the finished arm shape, so retrim the pattern and trace this new shape onto the side of each arm. Band sawing the arms to their final shape completes the tapering of the grooves. Once the arms fit the sides well, cut out the arm's top view from the full size patterns and trace this shape onto the stock. Now band saw the sides of the arms, sand them smooth, and glue them to the settle.

Enclosing the Bench

To allow for seasonal movement, the tongue and groove boards should be screwed to the bench frame, but not glued. Before installing the boards, however, use a 3/8" chisel and a knife to extend the rabbet in each side panel so it matches the rabbet in the crest rail (see exploded view detail). Now hold the left back board (piece 4) in position and drill countersunk pilot holes into the two back support rails and screw the board to the frame. Work your way across the bench one board at a time, using 1/16" thick shims between the boards to allow for expansion. Trim the last board to fit if necessary, but don't secure the ship-lapped ends of the boards until later.

Install the front boards (pieces 7, 8 and 9) in the same manner as the back boards, reaching into the chest to drill pilot holes and then screwing the boards to the front support rails.

Now cut out the full size patterns for the back vent openings and the base detail. Trace the base detail onto the front and back of the bench, then cut the shapes with a saber saw. Next, using the elevation on page 15 to position the vent openings, trace the patterns and remove the waste with a saber saw.

To cover the shiplap joint, both on the front and back of the settle, rip a pair of trim strips (pieces 14) to width, then bevel their edges at a 30° angle. Cut one strip for the front of

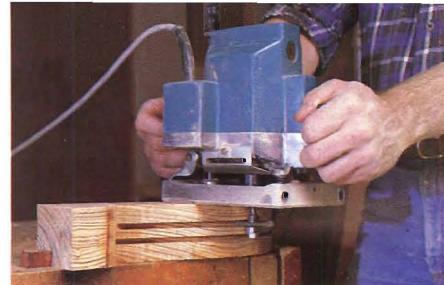


Figure 4: Define the groove walls in the arms with a 1/2" slot cutter. Make one pass from each side of the arm to ensure a centered groove.



Figure 5: Once the walls are cut, remove the rest of the waste with a chisel, making sure to extend the groove into the crease below the knob.

the settle and clamp it in place. Now, to secure the shiplaps and the trim, drill countersunk pilot holes in the back of the crest rail and drive two 1 1/4" long screws per board. Finish up by cutting the back strip to length and tacking it in place with #4 brads.

Final Details

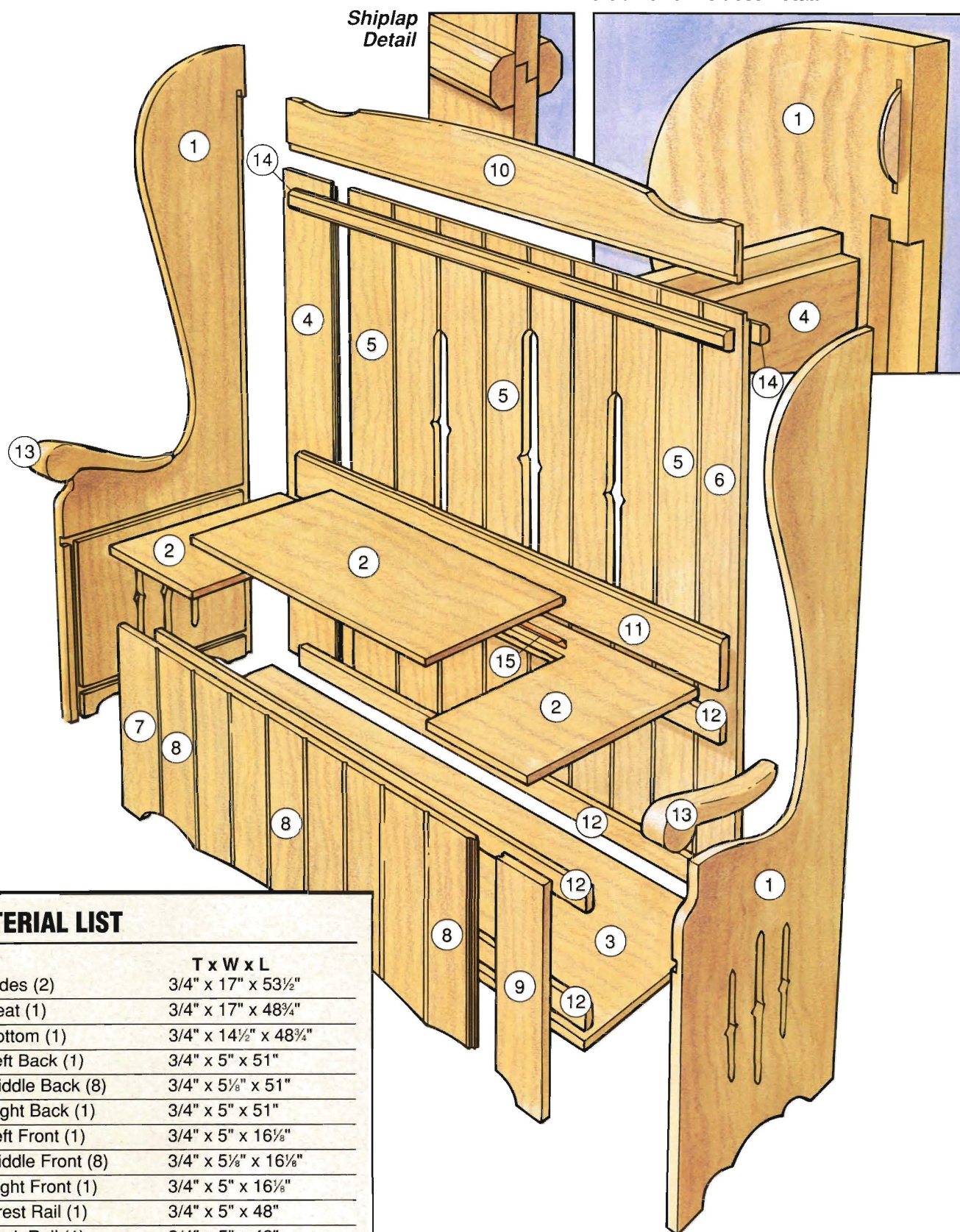
Because the lid must support a fair amount of weight, a continuous piano hinge (piece 15) is the best choice for securing it to the seat. Fortunately, these are easy to install. First, cut the hinge to length, then drill pilot holes and screw it to the back edge of the lid. Now get a friend to hold the lid in the seat opening while you secure the hinge to the seat.

Chances are the front edge of the lid isn't even with the seat, so trim it flush with a hand plane. While you're working on the seat edge, use a file to round each corner into the side panels.

With some edge filing the bench is ready for a finish. You can do almost anything you want on your bench, but make sure to sample stains on scrap pieces before working on the whole project. The stain used on this bench was Minwax's dark walnut. This gave the pine a ruddy brown color, creating an antique appearance. Following the stain, two coats of a tung oil finish were applied before putting the settle to use.

Chris Inman is the executive editor of Today's Woodworker magazine and a professional woodworker.

Side Panel Rabbet Detail



MATERIAL LIST

	T x W x L
1 Sides (2)	3/4" x 17" x 53 1/2"
2 Seat (1)	3/4" x 17" x 48 3/4"
3 Bottom (1)	3/4" x 14 1/2" x 48 3/4"
4 Left Back (1)	3/4" x 5" x 51"
5 Middle Back (8)	3/4" x 5 1/8" x 51"
6 Right Back (1)	3/4" x 5" x 51"
7 Left Front (1)	3/4" x 5" x 16 1/8"
8 Middle Front (8)	3/4" x 5 1/8" x 16 1/8"
9 Right Front (1)	3/4" x 5" x 16 1/8"
10 Crest Rail (1)	3/4" x 5" x 48"
11 Back Rail (1)	3/4" x 5" x 48"
12 Support Rails (4)	3/4" x 2 3/4" x 48"
13 Arms (2)	2 1/2" x 3" x 12"
14 Trim Boards (2)	3/4" x 2" x 50"
15 Piano Hinge (1)	1 1/2" x 36" (brass finish)



A Rug Running Sports Coupe You Can Build In A Weekend

Lift the hood to check the spare, open the doors and climb in. You're ready to roll.

By Dan Jacobson

Making toy cars gives me endless hours of enjoyment. Most of all, I like tinkering with the moving parts and creating little surprises behind the doors. While these toys are meant for children, no one gets more excited than I do when the wheels turn or the doors open for the first time.

Cars come in so many shapes and sizes that the design possibilities are limitless, and kids always have vivid imaginations when it comes to automobiles. I generally use softwoods for the parts as they're easy to shape with files and sandpaper. For contrasting colors I like pine and redwood. The pine blends well with manufactured parts like wheel axles, tire hubs and dowels. I think my nicest find of late is the rubber tires, which add a realistic touch to the project (*all specialty parts are available from The Woodworkers' Store; 612-428-3200*).

Full size patterns for the car are **shown on the next page**, and the material list will help you pick woods of the correct dimensions for each part. The primary tool I used for making the car was a scroll saw, although the drill press also came in handy.

Building The Car

Most of the car construction is very straightforward and doesn't require any explanation. However, there are four steps that I should touch on to make everything crystal clear. None of these steps is difficult, but pointing them out will help you avoid any head scratching when you get around to building your own car.

Each side and its mating door start out as one piece of wood. I cut the overall shape of the side on the scroll saw, then I drill the 1/8" hinge pivot hole for the door. By drilling the hole now I can guarantee its accuracy. After the hole is drilled I cut out the door with a scroll saw. When I put the doors back in the sides, I tap in the pivot dowel without any glue. The doors always swing perfectly.

Although this is hidden from view on the completed car, the trunk lid and hood each pivot on 1/8" x 1/2" dowels held in the sides. Be sure to drill the holes on the inside face of each side before assembling the car, then pin the hood and trunk lid when you join the sides with the body. Don't use any glue on these pivots.

The third point I want to make regards drilling the 1 3/4" holes in the body for the trunk and engine compartment, as well as the back window in the roof. Use a drill press and a Forstner bit to bore out these holes before shaping the blocks of wood, then cut the blocks to shape with a scroll saw. It's much more difficult to drill the holes after the wood is shaped.

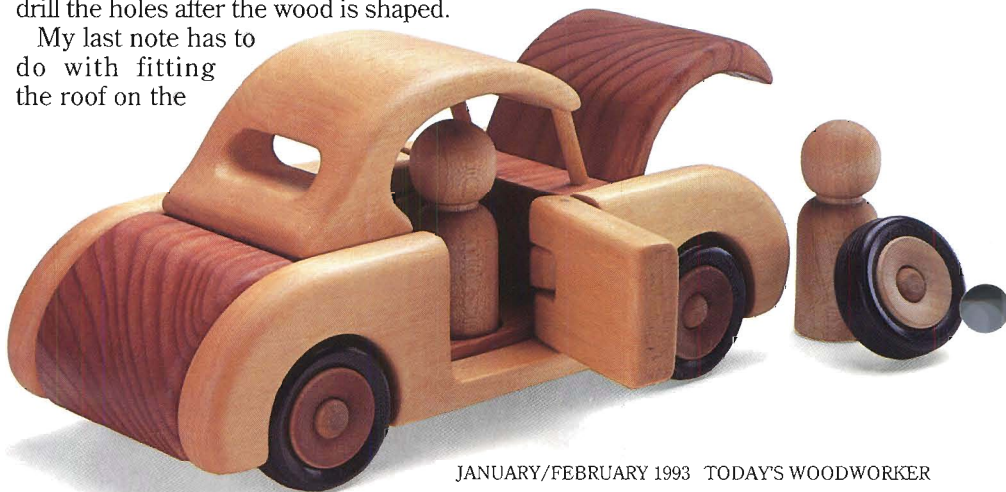
My last note has to do with fitting the roof on the

posts. Drill the post holes in the body at a 20° angle, then, after joining the sides to the body, glue in the posts. Next, carefully file the top of each post at an angle to meet the roof. When the roof sits evenly on the body ledge and the posts, glue everything in place.

The rubber wheels come with axles, but I cut them a little shorter so they don't break into the trunk or engine compartments when they're installed. After assembly I tint the wheel hubs with a little cherry stain to match the redwood, then I topcoat the car and the wooden people with two coats of oil finish.

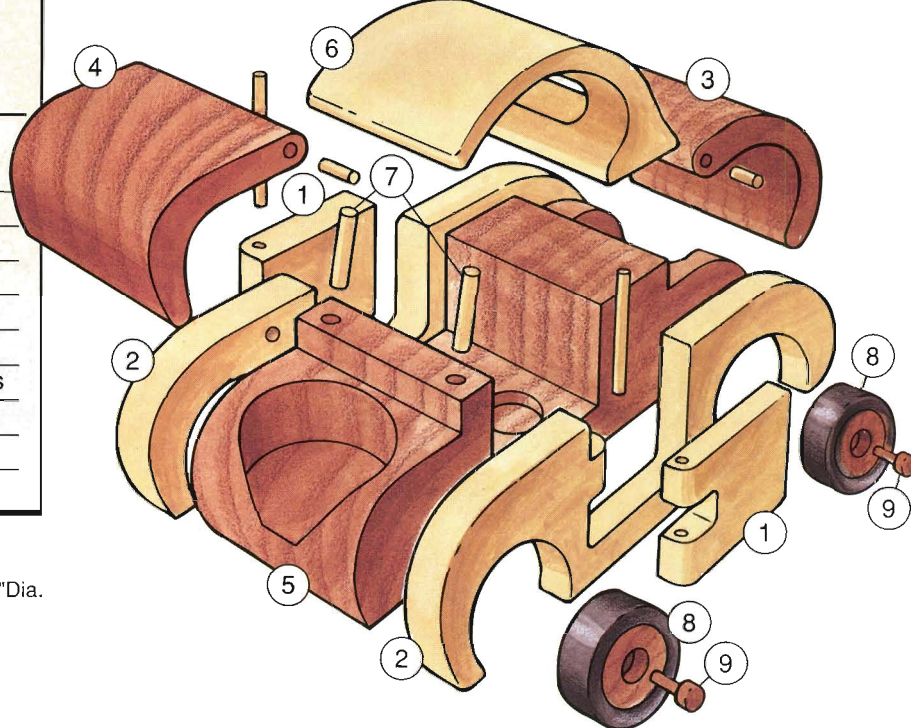
Once you get the hang of this design, you can branch out to other car models. They're all built the same way, but I do vary the proportions and shapes of the pieces to accentuate different effects, like large fenders, tail fins and rooflines. All I have to do is check out a book on cars from the library and I'll find my next design.

Dan Jacobson is an amateur woodworker and designs projects for Today's Woodworker.

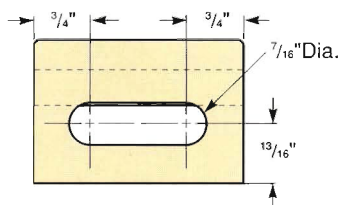


MATERIAL LIST

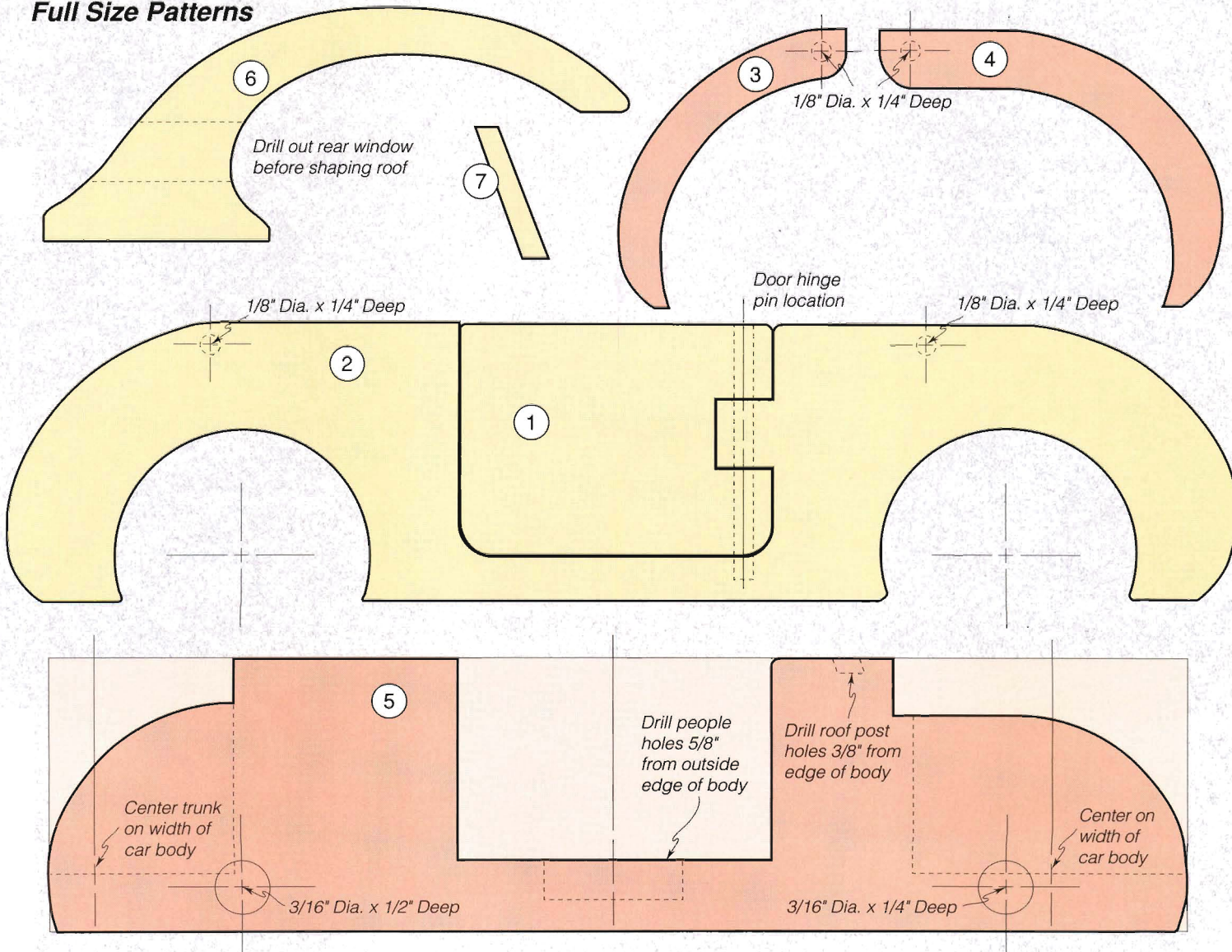
	T x W x L
1 Doors (2)	1/2" x 1 1/16" x 1 15/16"
2 Sides (2)	1/2" x 1 3/4" x 7 3/4"
3 Trunk Lid (1)	3/8" x 2 5/8" x 2 5/8"
4 Hood (1)	5/16" x 2 5/8" x 1 1/2"
5 Body (1)	1 3/4" x 2 5/8" x 7 3/4"
6 Roof (1)	1 1/2" x 2 5/8" x 3 3/4"
7 Roof Posts (1)	3/16" x 1 1/8" dowels
8 Tires (4)	1 1/2" diameter
9 Axles (4)	7/32" diameter
10 People (2)	7/8" dia. x 2 5/8" tall



Rear Window
Drilling Detail



Full Size Patterns



Fire Retardant Finishing Cabinet

By David Larson

It's a problem common to every shop, and often the situation comes on so gradually that it goes completely unnoticed. I'm talking about the accumulation of finishing supplies and solvents, and the challenge of storing them in a safe way.

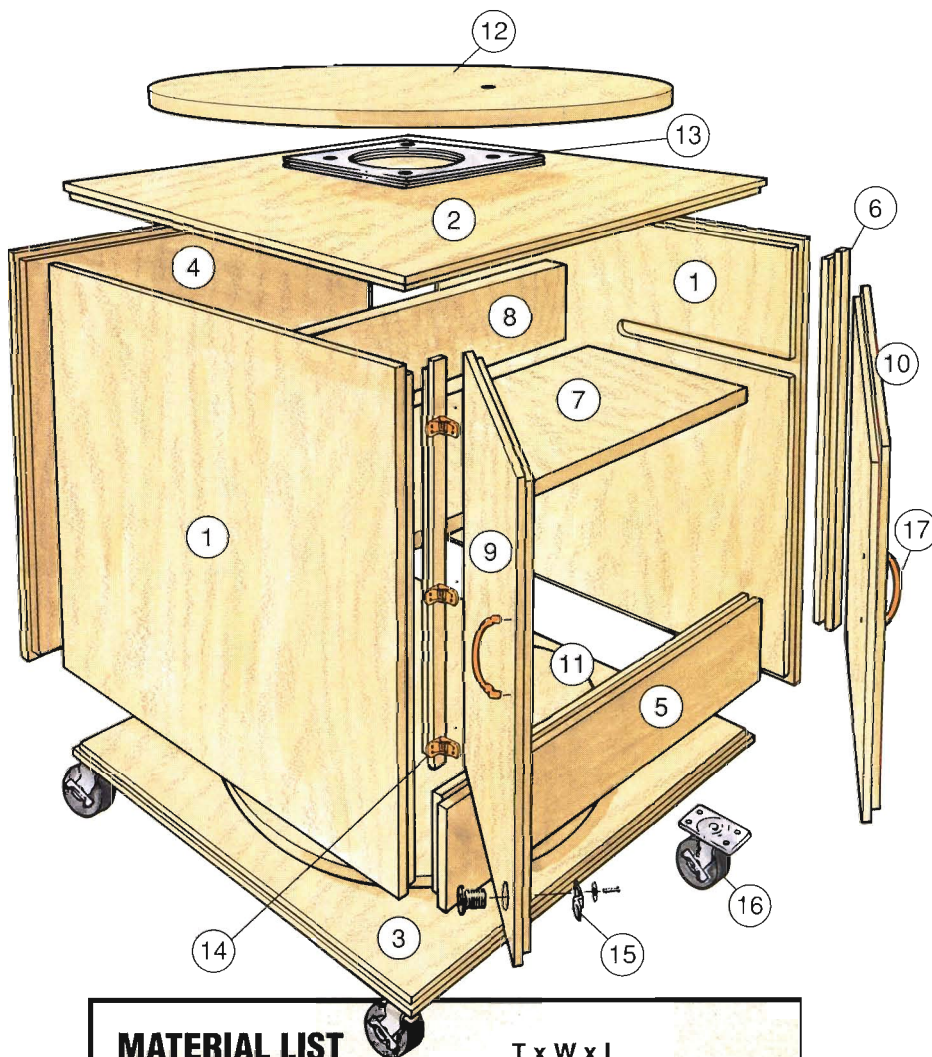
I've been working wood for several years and spend lots of time fixing my house and refinishing antiques. Consequently, I've accumulated quite a few cans of stains, varnishes, oils, strippers, and solvents (mineral spirits, turpentine, lacquer thinner and alcohol). My guess is that most woodworkers are in the same boat. When I realized how many of these flammable materials I had carelessly stacked on open shelves, I knew I had a problem to solve.

What To Do?

My first task was to find out the proper method for storing flammable liquids. My search quickly led to the State Fire Marshall's office where I obtained the codes for a flammable liquid storage cabinet. I should point out that these codes apply to Minnesota, and there is no unified national code. You should check with your State Fire Marshall to see if you have additional codes to consider when building this cabinet.

On the whole, the codes are straightforward (see box at right), although two of the requirements may be unfamiliar to woodworkers. The first is intumescent paint. This is a special paint that swells and chars in the presence of heat, forming an insulating fire retardant barrier between the wood and the flame. Normal paints burn or slough away when exposed to high heat. I found intumescent paint at a large local paint supply, and it's a common product for the building trades.

The other unusual requirement is sealing the bottom of the cabinet. At first blush this seems easy, just use caulk. But I soon realized that common caulks are petroleum based, as are most of the liquids in the cabinet.



MATERIAL LIST

T x W x L

1 Sides (2)	1" x 23 $\frac{3}{4}$ " x 23 $\frac{3}{4}$ "
2 Top (1)	1" x 23 $\frac{3}{4}$ " x 23 $\frac{3}{4}$ "
3 Bottom (1)	1" x 23 $\frac{3}{4}$ " x 23 $\frac{3}{4}$ "
4 Back (1)	1" x 23 $\frac{3}{4}$ " x 22 $\frac{3}{4}$ "
5 Sill Plate (1)	1" x 4 $\frac{1}{2}$ " x 23 $\frac{3}{4}$ "
6 Stiles (2)	1" x 1 $\frac{1}{2}$ " x 19 $\frac{1}{4}$ "
7 Shelf (1)	1" x 12" x 23 $\frac{3}{4}$ "
8 Retaining Wall (1)	1" x 4" x 22 $\frac{3}{4}$ "
9 Left Door (1)	1" x 10 $\frac{7}{8}$ " x 19 $\frac{1}{4}$ "
10 Right Door (1)	1" x 11 $\frac{7}{8}$ " x 19 $\frac{1}{4}$ "
11 Lazy Susan Platform (1)	3/4" x 21 $\frac{1}{4}$ " x 21 $\frac{1}{4}$ "
12 Lazy Susan Platform (1)	1" x 21 $\frac{1}{4}$ " x 21 $\frac{1}{4}$ "
13 Lazy Susans (2)*	6" x 6" ball bearing type
14 Hinges (6)*	Spring closing (brass finish)
15 Lock (1)*	Disk tumbler cam type
16 Casters (4)*	2 $\frac{1}{2}$ " wheel (locking type)
17 Handles (2)*	3" boring (brass finish)

* These items are available as a kit. See end of article for details.

1. Use 1" thick exterior plywood
2. All joints must be rabbeted
3. All joints must be screwed from two directions
4. Doors must be self-closing and equipped with strong hinges and a catch
5. The bottom of the cabinet must be liquid tight for a height of at least 2"
6. Doors must be well fitted and, if two doors are used, they must have a rabbeted overlap of at least 1"
7. Cabinets must be covered with an intumescent type paint



This means that a spill inside the cabinet of mineral spirits, for instance, would soften the caulk and render the cabinet unsealed. The leak could then cause a fire in the shop. When I mentioned this to the folks at the paint store they had a solution: epoxy caulk. Epoxy is very resistant to chemicals, and even strippers have a difficult time removing epoxy finishes. The product I used is called Epoxy Caulking Compound from Pittsburgh Paints.

It's important to note that a flammable liquid storage cabinet only delays a fire from reaching the finishing supplies. It cannot prevent the materials from catching fire altogether. The delay, however, allows time for fire fighters to extinguish the flame before it reaches the finishing supplies.

Cabinet Features

After completing the design I collected the materials for my cabinet from the lumberyard and paint store. I built the cabinet from a single sheet of 1" thick plywood, and put the cabinet on casters so I could roll it right to my

workbench when it's needed. In addition, I installed a lazy susan shelf on the top of the cabinet to use as a finishing stand. I can set a project on the shelf and brush on a finish while having full access to the workpiece. I also installed a lazy susan shelf in the bottom of the cabinet to make the inside space fully accessible. This allows me to bring any can of material right to the front, where it's easy to reach. Since I had plenty of vertical space in the cabinet I added an upper shelf to store quart and pint containers. This shelf is only 12" deep so I don't have to reach too far for cans in the back. The addition of a retaining wall keeps the cans from falling off the shelf.

One important point the Fire Marshall made was to avoid hanging paint brushes or other objects on the outside of the cabinet. They will catch fire right next to the paint and ruin its effectiveness.

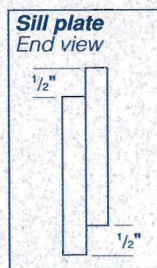
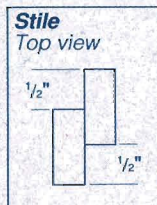
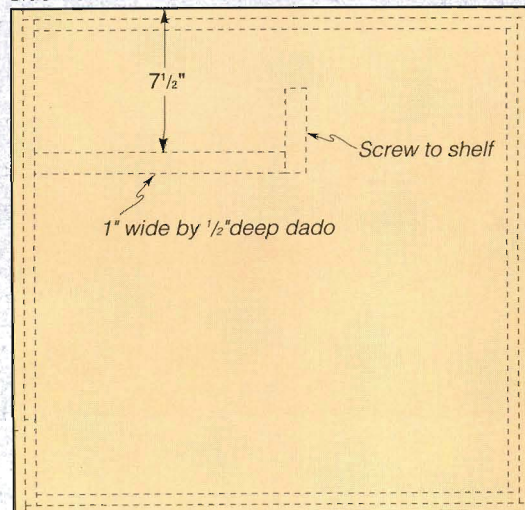
Building The Cabinet

Begin building your cabinet by cutting the plywood to size following the **cutting diagram** on page 22. Next, install a 1/2" dado blade in your table saw and raise it 1/2" to cut rabbets on all edges of the

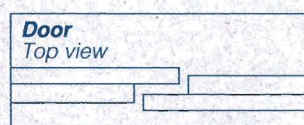
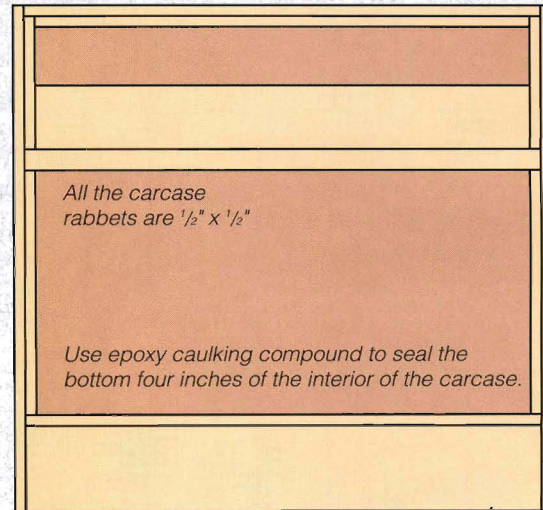
Elevation Drawings

(Drive screws from both sides of all rabbeted joints at 3" intervals.)

Carcase
Side view



Carcase
Front view



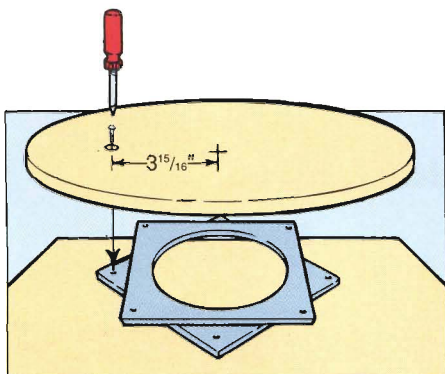


Figure 1: To install the lazy susan, first drill a 1/2" access hole 3 15/16" from the center of the platform. Secure the lazy susan to the platform and use the access hole to screw the assembly to the base.

sides (pieces 1), top (piece 2), bottom (piece 3), back (piece 4), the sill plate (piece 5) and stiles (pieces 6). For pieces 1-4, the rabbets are all on the inside face of the plywood, but for pieces 5 and 6 three edges are rabbeted on the inside face and one long edge should be rabbeted on the outside face. Once you've rabbeted the sides, rout the 1/2" deep stopped dadoes for the shelf (piece 7) with a 1" diameter straight bit.

Center and screw the retaining wall (piece 8) to the back edge of the shelf, then dry assemble the cabinet. With everything clamped together, drill 3/8" counterbores and 5/32" pilot holes from both directions along every rabbet joint, and drill several holes into each side of the shelf joint. Now take apart the pieces, spread glue in the rabbets and dadoes, and reassemble the cabinet. Drive #6-2 1/2" screws in all the pilot holes, then cover the screws with 3/8" wood plugs.

The doors (pieces 9 and 10), which you've already cut to size, must be rabbeted on three edges to fit into the cabinet, and on the fourth edge for the 1" overlap. (**Note:** The 1" rabbet on the right door (piece 10) should be cut on the front face, while all other door rabbets should be cut on the back face.) Complete these rabbets, then use a saber saw to cut the round lazy susan platforms (pieces 11 and 12). I couldn't cut both platforms out of the sheet of plywood, so I used scrap 3/4" plywood for the inside lazy susan.

Now install all the hardware

This cabinet is a safe place to store flammable materials, and the lazy susan makes a perfect finishing stand.

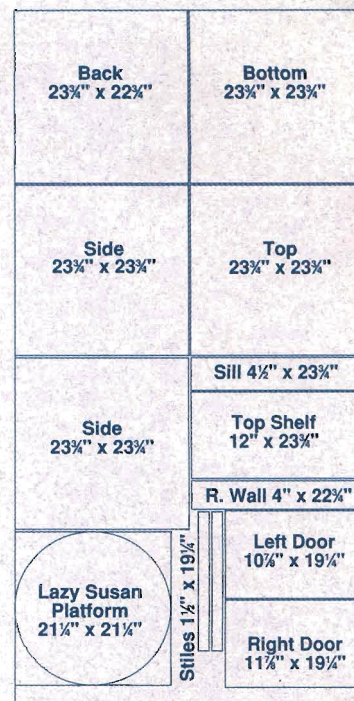
on the cabinet, starting with the lazy susans (pieces 13) and the platforms (see **Figure 1** at left). I used three hinges (pieces 14) on each door for more than enough support, and, for peace of mind, I installed a disc tumbler lock (piece 15) in the left door to keep the cabinet secure. Since the lock works on doors up to 7/8" thick, I drilled a 1/8" deep mortise to recess the face plate before drilling the through hole. The last bits of hardware to mount are the casters (pieces 16) and the handles (pieces 17).

Finishing Up

Remove all the hardware so you can paint the cabinet thoroughly. Use a nylon brush to spread the paint, making sure to cover all the wood parts. As an extra precaution, I coated both the outside and inside of the cabinet with the intumescent paint.

Once the paint dries, apply the epoxy caulk to all the inside seams that are within 4" of the bottom cabinet panel. Your goal is to make the bottom area completely leakproof. Mix the epoxy carefully, then apply it with a tongue depressor. I'd suggest wearing latex gloves to keep the epoxy off your hands.

Now screw all the hardware back into place and find a safe spot to store the key to the lock. Not only have I found the cabinet to be a safe place for organizing my finishing supplies, but the addition of the lazy susan platform has come in handy many times for working on small projects. However, a word of caution is due here. Don't use the platform for spray fin-



This diagram shows the best way of cutting the plywood sheet to get all the pieces for the cabinet.

ishing because the overspray will land on the cabinet and reduce the effectiveness of the intumescent paint. Since mine is just a hobby shop, this isn't ever a limitation—I don't even own spray equipment. If you do spray all your projects, consider leaving the top lazy susan off altogether.

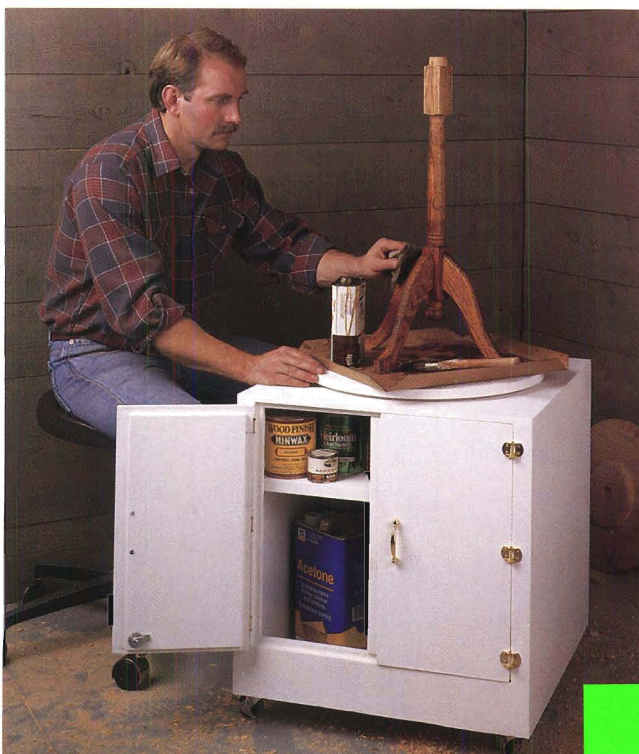
The cost of this project ran me about \$150.00. The major expense was the paint and caulk, and I only used about half of this material. If you can interest a friend in this project you could split the cost of these materials, saving each of you about \$40.00. The cost might deter a few woodworkers from building the cabinet, but when you consider the risks of storing flammable liquids improperly, it seems minimal, and it's far less than buying a commercially available fire rated cabinet.

David Larson is an amateur woodworker who spends much of his spare time building a houseful of furniture.

Finisher's Cabinet Hardware Kit

A hardware kit is available for the finisher's storage cabinet. It includes 2 lazy susans, 6 spring hinges, 1 lock, 4 casters and 2 handles.

Item #88361 (use order form)...\$35.95



Harvesting Our Hidden Forests

By Gordon Hanson

There's a hidden forest of wood resources out there, and people like Max Talbert of the Duluth Timber Company have found it. Talbert refers to this discovery as "logging the industrial forest"—a poignant way of recognizing the growing number of people salvaging wood from buildings scheduled for demolition. Other people working to salvage wood have taken to the rivers, lakes and swamps to rescue timbers once abandoned by loggers of a bygone era.

The old growth forests yielded massive logs that we're unlikely to ever see again. The Joinery Company, a firm that salvages southern longleaf pine from old buildings about to be torn down, reports in its product literature that early European settlers found 450 year old pines "up to 170 feet tall and as large as five feet in diameter." The Goodwin Company, on the other hand, reclaims old longleaf pine logs from rivers. If it weren't for efforts like these, today's woodworkers would have little opportunity to use southern yellow pine because it was virtually clear cut during the last century.

Many of the logs fished out of rivers sunk in transit to the mills. Since wood was so abundant in the last century, these logs were simply written off at the time, but the increasing value of wood makes it economically feasible to retrieve them today.

The "industrial forest" that Talbert is logging ranges over the entire country. He and his crew travel wherever old buildings are being torn down. The Duluth Timber Company works cooperatively with demolition crews, but sometimes deadlines prevent them from stripping a building completely of its usable wood. The workers remove the lumber piece by piece, scan it with metal detectors to locate nails and then mill it for new uses. Most metal objects

are located, but occasionally a saw blade falls prey to a stray piece.

John Longanecker, who operates Centre Mills Salvage, has a passion for both history and wood. Longanecker makes an effort to document the age of a structure prior to salvaging its wood. This means customers seeking authenticity in restoration projects can specify an historical era when placing a wood order, such as Colonial (1670-1820), Federal (1790-1820) or Victorian (1860-1900)—just to name a few. His company salvages numerous species, including oak, chestnut, poplar, hemlock and cypress.

Salvaging old wood is always a challenge, but some people take the adventure to its limits. Take Harold Faust for example, owner of a company called What It's Worth. His efforts to rescue cypress logs (some up to

Old Growth Sources

Duluth Timber Company
3310 Minnesota Avenue
Duluth, MN 55802

Goodwin Heart Pine Company
Route 2, Box 119-AA
Micanopy, FL 32667

Albany Woodworks
P.O. Box 729
Albany, LA 70711

Centre Mills Antique Wood
P.O. Box 16
Aspers, PA 17304

The Joinery Company
P.O. Box 518
Tarboro, NC 27886

What It's Worth
P.O. Box 162135
Austin, TX 78716



Figure 1: Salvaged from a warehouse in Montana, these beams made their way back to Duluth, Minnesota, where they'll be used for a new purpose.

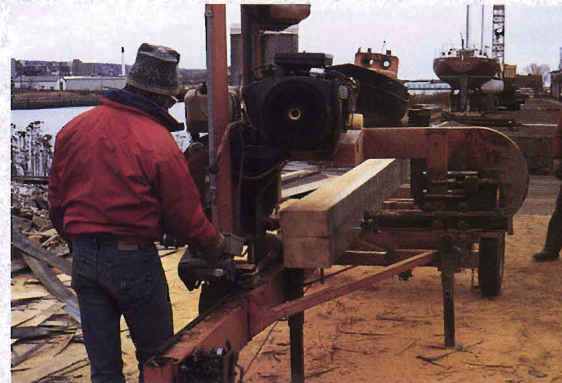


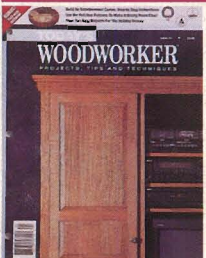
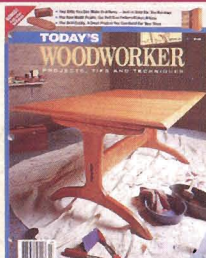
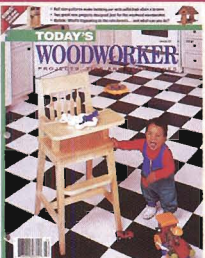
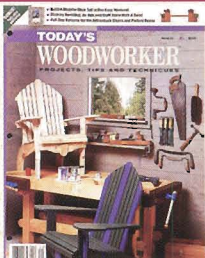
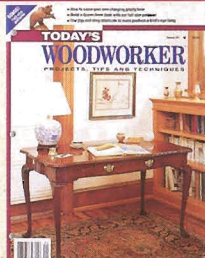
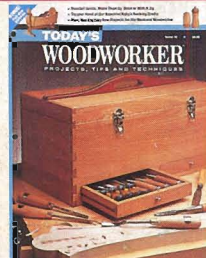
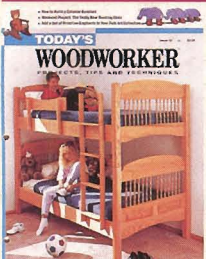
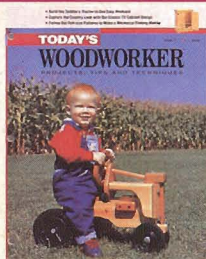
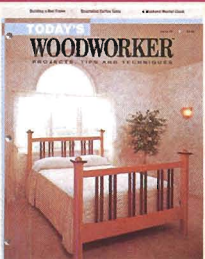
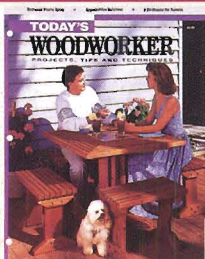
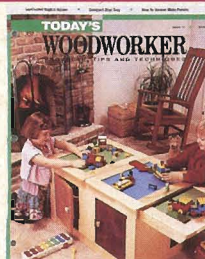
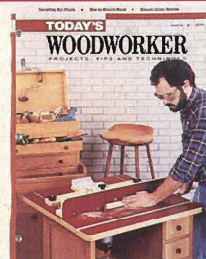
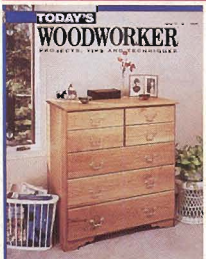
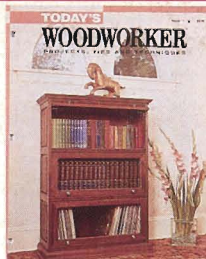
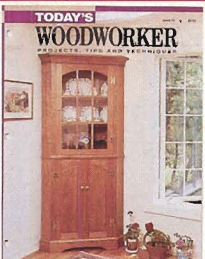
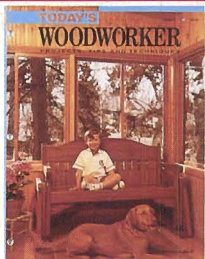
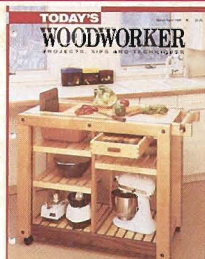
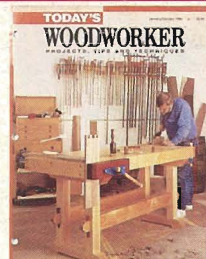
Figure 2: The crew at the Duluth Timber Co. hefted the beams onto their WoodMizer hand saw mill and sliced the stock into 1" thick boards.



Figure 3: Eighty board feet of resawn pine lumber was transported to the Today's Woodworker workshop and used to build the Country Settle.

2000 years old) from the bogs of southern Louisiana have put him in the path of snapping turtles and gar fish and once nearly resulted in his drowning. He got started in the business by researching the location of old mills and cypress breaks. What he found is old growth wood with extraordinary denseness—some with up to 50 growth rings to an inch. Faust currently has approximately 100,000 board feet of virgin tidewater cypress in stock, and he estimates there are millions of board feet still in the rivers waiting to be harvested.

FREE binder when you order six back issues or more!

24  Entertainment center, dining chair (for table in issue 23), serving tray and tree ornaments. Item 79707\$3.95	23  Contemporary dining room table, drill bit cabinet and three weekend gift projects. Item 79699\$3.95	22  Classic tavern mirror, a high chair for the ages, display case and a weekend bird feeder. Item 79681\$3.95	21  Adirondack Chair, easy to make deck set, scroll saw project and a sofa table. Item 79673\$3.95	20  A Queen Anne desk with cabriole legs, carved grizzly bear and a table lamp. Item 79665\$3.95	19  Craftsman's toolbox, a swinging cradle, turned salt and pepper shakers and a simple bookcase. Item 79582\$3.95
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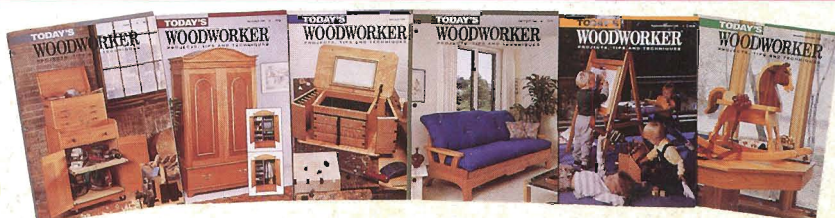
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10389\$5.95



To order Back Issues, Binders, Hardware Kits or Craftplans, please use the order form on page 12.

Issues 1-6 described on order form.



back vent
(above) are
in position,
vents at left
elevations
to establish

*Front edge of side
panel is straight
after this point*

10 Crest Rail Detail

Center line

Base Detail for Front Boards and Back Boards (Cut to shape with a saber saw after assembly)

Full-Size Patterns™

- Open staples carefully, remove pattern and fold staples back in place.
- Use graphite paper (available at most art supply stores) or cut and trace the pattern onto your stock.



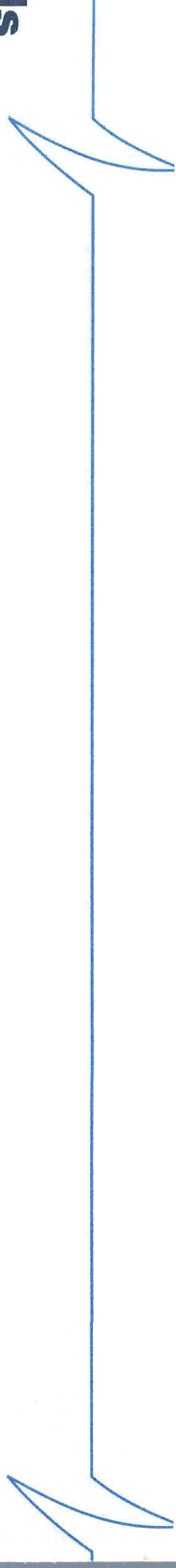
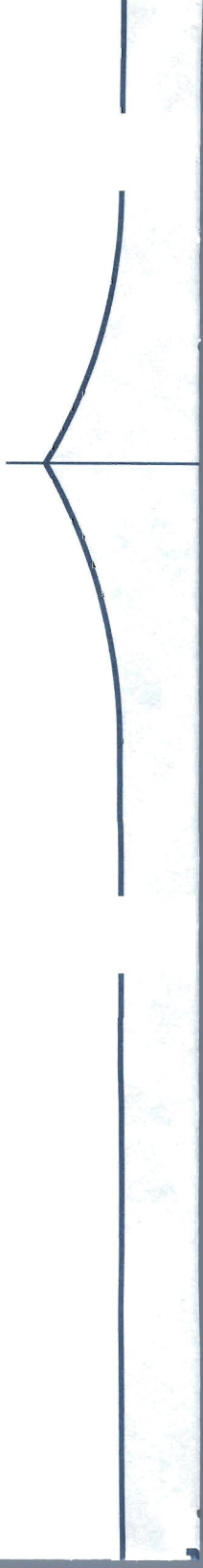
New England Settle

Includes patterns for the side panels, arms, base details (front, back and sides), crest rail detail, back vent openings and side vent openings.

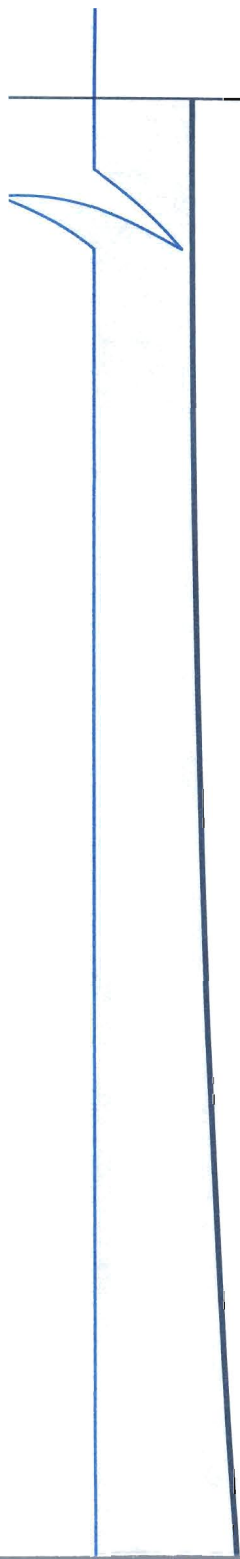
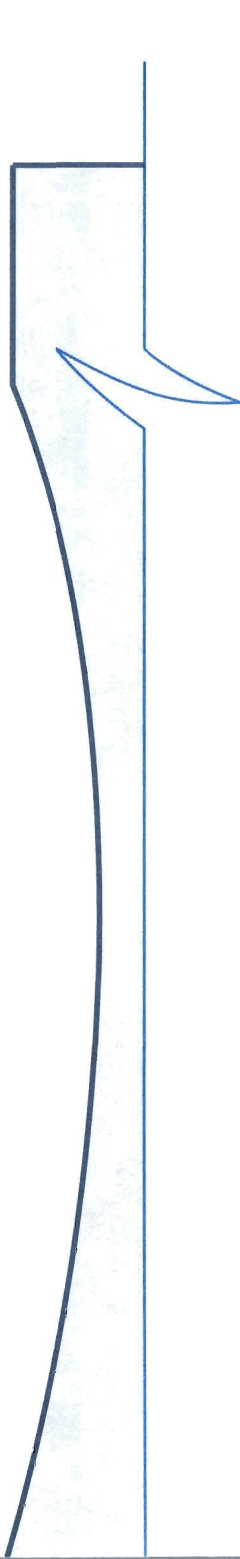
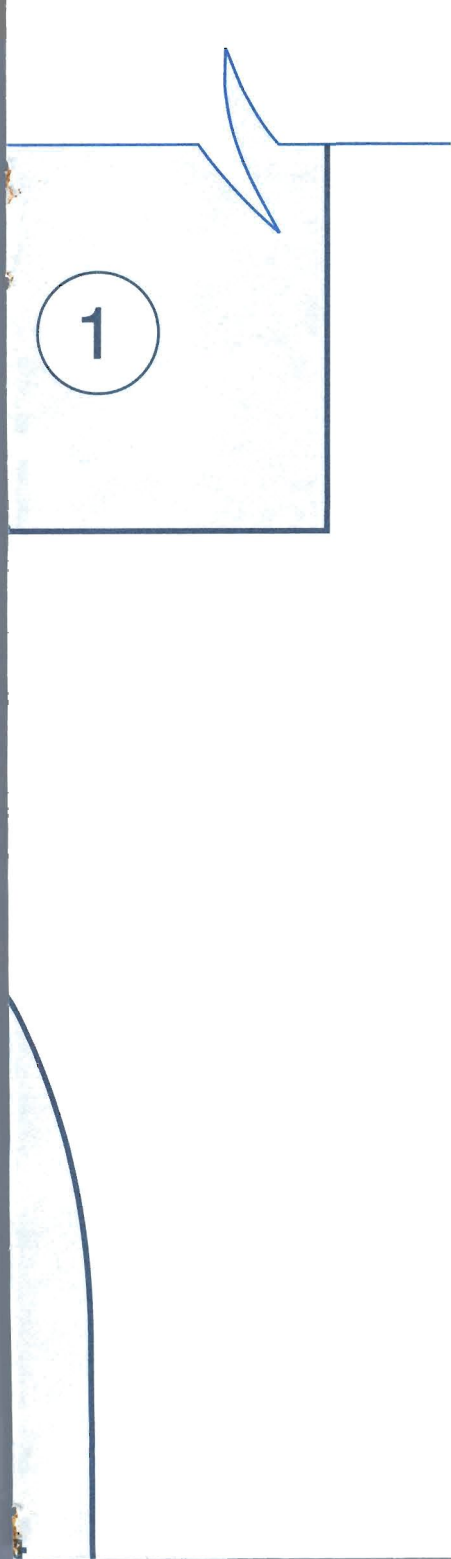
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sl



Center line $\rightarrow$

**e Vent
enings**
*ouped in
osition)*

Note: The b
openings (ab
not grouped i
but the side v
are. Use the c
on page 15 to
all positions.

*Use center line to lay
out side vent grouping;
(see elevation drawing on
page 15 for position).*

1

Side Panel
Side view

Base Detail for Side Panels

Center line

*Use center lines to lay out
back vent openings;
(see elevation drawing on
page 15 for position).*

Instructions

1. Draw a center line.
2. Mark the back.
3. Draw the arm.
4. Lay out using the
dashed line
5. Shape.

**Back Vent
Opening
(Center)**

**Back Vent
Opening
(Outside)**

*Chisel this notch to
match rabbet in crest rail*

Stop rabbet here

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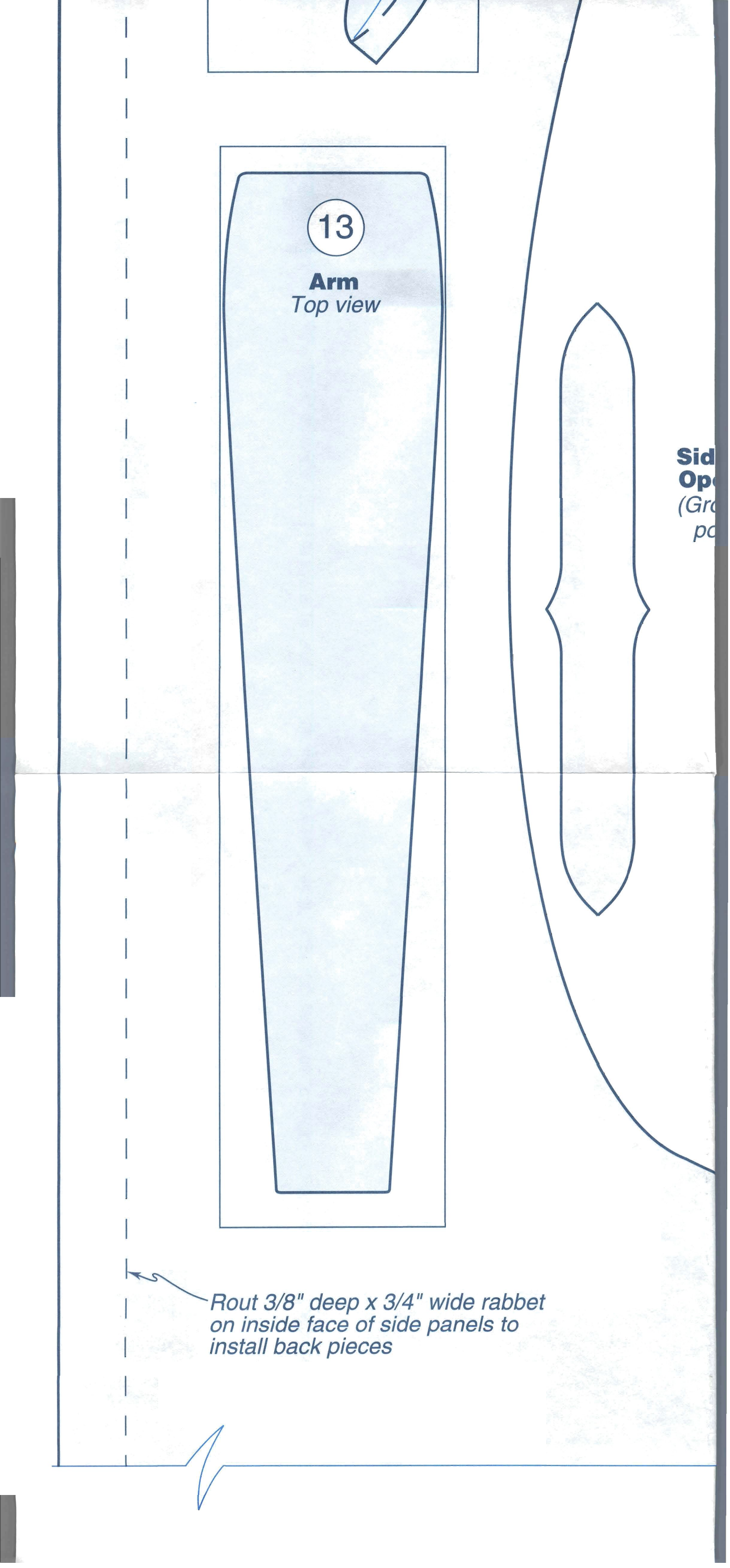
Arm
side view

Arm Shaping Instr

1. Cut arm shape along solid
2. Trace pattern onto arm stock
3. Band saw bottom edge of
4. Rout and chisel arm groove
blue line as a reference.
5. Recut arm pattern along o
and trace onto stock.
6. Band saw arm to final sha

*Rout a 1/2" deep by
3/4" wide groove with
a slot cutting bit*

*Final shape
of arm*



13

Arm
Top view

Sid
Op
(Gro
po

*Rout 3/8" deep x 3/4" wide rabbet
on inside face of side panels to
install back pieces*