

BONUS!
Full-size
Patterns



- Two great new projects for the Weekend Woodworker
- Last minute holiday gift ideas (with full-size patterns!)
- A labor of love: Building the classic American crib



TODAY'S

Issue 30

\$3.95

WOODWORKER®

PROJECTS, TIPS AND TECHNIQUES





TODAY'S WOODWORKER®

PROJECTS, TIPS AND TECHNIQUES

22 Nessie Bookends

By Dan Jacobson

Let our friendly Nessie cradle your kids' favorite books this holiday season.

13 Rush Covered Stool

By David Larson

If you thought rush was just for old chairs, take a look at this distinctive project.



16 Early American Plate Rack

By Chris Inman

Follow our full size patterns to make this colonial inspired accent piece —it's perfect in any kitchen.



8 An American Classic

By Rick White

Future woodworkers deserve a finely crafted original to start their lives off on the right foot.

20 Barnyard Bonanza

By Roberta Kolles

Yee haa! Round up some scrapwood and build a corral full of critters for your little buckaroo.



3 On the Level

A time to enjoy the gift of woodworking.

4 Tricks of the Trade

Homeshop remedies.

6 Techniques

A fresh look at an old technique: rush weaving.

7 Hardware Hints

End appliance clutter with a swing-up shelf.

12 Today's Wood

Taking a second look at alder.

19 Finishing Thoughts

For matching an antique finish, nothing beats aniline dyes.

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.

LARRY N. STOLAKEN
Editor in Chief

JOHN KELLIHER
Art Director

CHRISTOPHER A. INMAN
Editor

STEVE HINDERAKER
Associate Art Director

NANCY A. AMMEND
Production Manager

JEFF JACOBSON
Technical Illustrator

GORDON HANSON
Copy Editor

DAN JACOBSON
Project Designer

ANN ROCKLER JACKSON
Publisher

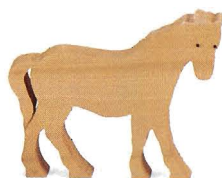
JIM EBNER
Director of Marketing

DEB HOLM
Circulation Coordinator

NORTON ROCKLER
RICK WHITE
STEVE KROHMER
AL WOLFORD
Editorial Advisors

TOM CASPAR
PETER KORN
RICHARD STARR
Contributing Editors

The Gift of Woodworking



Get ready, the woodworking season is upon us again! No other time of year can match late autumn for digging into this craft we enjoy so much. The saw blades are sharpened, the supplies are replenished and the power tools are fine tuned. In short, we're all ready for some challenging new projects.

Which, believe it or not, brings me right to the critters roaming around the pages here.

When Roberta (Bobbi) ventured out of Rick's shop a couple of months ago to show us her just completed fence, we all were charmed. We unfolded it, made it into a corral and noticed how cleverly the short pieces interlock to keep the animals contained. About then, someone said that we ought to design a few animals to go with Bobbi's fence and make it one of the projects for this issue.

Next, of course, the great debate began. It's familiar enough to the staff around here, with all of us switching positions as each new project comes along. It goes something like this:

"Well, you know it's not exactly fine woodworking."

"That's true, but it's a great idea."

"Yeah, but there's no real joinery."

"Hey, it's a project for kids. They don't care about joinery, they just want to have some fun with it."

The rest, as they say, is history. John and Dan borrowed Bobbi's fence for some fine tuning. Jeff had me gather all of my daughter's animal books so

he could develop "the right look" for our farm critters and, two days later, we had Bobbi back in the office to pick up our fence changes and drawings for a new herd of animals.

Believe me, we know. It's not brain surgery. It's not even fine woodworking. But it is a lot of fun, it's quick, it costs very little and it's an absolute hit with every kid that sees it.

I guess that's the point with this project, and with Little Nessie as well. Every now and then it's important that we all relax a bit and turn out a simple gift or two. If it's been awhile, you'll find that there's no greater return on your woodworking investments than the smiles you'll see at Christmas time. So take a few hours to produce a simple project for your kid, or grandchild, or maybe even some kid you've never met. You'll be glad you did.

The January issue is moving along nicely; Dan is working on a portable doll house, Chris has completed a beautiful coat rack and Rick is getting busy on our next shop project — an all-purpose sanding caddy. The whole staff would like to wish you a Merry Christmas and a happy New Year.

Larry N. Stolaken

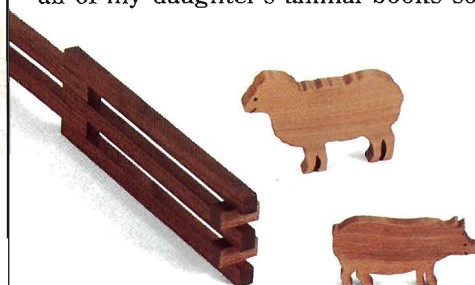
Today's Woodworker, (ISSN: 1041-8113) is published bimonthly (January, March, May, July, September, November) for \$18.95 per year by Rockler Press, 21801 Industrial Blvd., Rogers, MN 55374-0044. Second class postage paid at Rogers, MN and additional mailing offices.

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.

Today's Woodworker is a registered trademark of Rockler Press.

Copyright 1993, by Rockler Press.

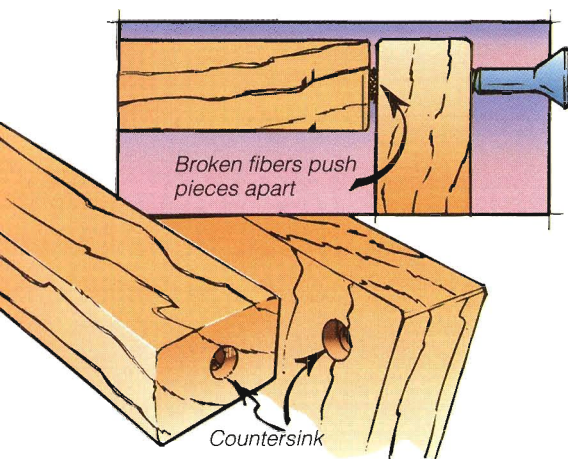


STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION (Required by Section 3685, Title 39, United States Code.) 1A. Title of publication: Today's Woodworker. 1B. Publication no. 10418113. 2. Date of filing: September 29, 1993. 3. Frequency of issue: bimonthly. 3A. No. of issues published annually: 6. 3B. Annual Subscription Price: \$18.95. 4. Complete mailing address of the publication office: 21801 Industrial Blvd, Rogers MN 55374-0044. 5. Complete mailing address of the headquarters: 21801 Industrial Blvd, Rogers, MN 55374-0044. 6. Full names and mailing address of publisher and editor: Ann Rockler Jackson, publisher and Larry Stolaken, editor in chief; Rockler Companies, Inc., 21801 Industrial Blvd, Rogers, MN 55374-9514. 7. Owner, names and addresses of stockholders; Rockler Companies, Inc.; Ann Rockler Jackson and Norton Rockler, 21801 Industrial Blvd, Rogers, MN 55374-9514. 10. Extent and nature of circulation is:

	Average no. copies each issue during preceding 12 mo	Actual no. copies of single issue published nearest to filing date - Sept. 29, 1993
A. Total no. copies (net press run)	94,776	75,880
B. Paid and/or requested circulation		
1. Sales - dealers, carriers and counter sales	4,939	5,841
2. Mail subscription	46,011	62,104
C. Total paid and/or requested circulation	50,950	67,945
D. Free distribution by mail, carrier or means samples, complimentary, and other free copies	27,529	1,938
E. Total distribution	78,479	69,883
F. Copies not distributed		
1. Office use, left over, unaccounted, spoiled	14,822	5,605
2. Return from news agents	1,475	392
G. Total	94,776	75,880

I certify that the statements made by me above are correct and complete.
Larry Stolaken, Editor in chief - 10/1/93.

Homeshop Remedies



Gapless Screw Joints

When screwing two pieces of wood together, a small gap often develops between the pieces. This happens because the screw pulls at the wood fibers on each piece, causing a hump. To remedy this problem, countersink each of your pilot holes a little on the mating surfaces. You'll end up with a gapless joint every time.

*Frank A. West
Moreno Valley, California*

Cool Blocks from Old Batteries

After hearing about carbon guide blocks that won't overheat band saw blades, I went searching for some to fit my 10" band saw. Try as I might, I couldn't find any, even though hundreds of thousands of these saws have been sold in the past few years.

Eventually I thought of the perfect substitute. I took two size "C" flashlight batteries from the trash, and peeled away their coverings to remove the carbon anodes. I held each anode in my drill press while I filed them to fit my band saw guide block holders, then I broke them in half to get the four guide blocks I needed. Once I slipped the blocks into the holders I poured a few carbon particles into the set screw holes to prevent the screws from cracking the anodes. I can now push the guide blocks tight against the blade without causing excessive heat.

*James A. Johnson
Brunswick, Ohio*

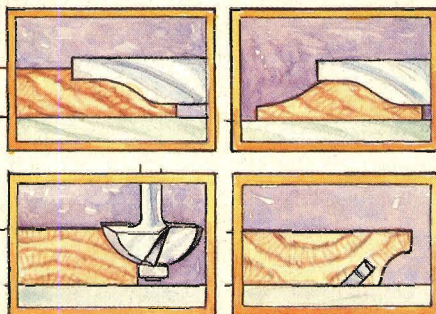
A Pretty Slick Tool Rest

I used to have trouble getting an even grind on my chisels and wood turning tools because my grinder's tool rest is rough and undersized.

As an improvement I cut a 2" x 3½" brass plate and epoxied it onto the tool rest. The new surface is smoother and larger, and tools move across the plate easily. Sometimes I go a step further and coat the plate with a thin film of Vaseline to make the surface even slicker.

*Oscar Williams
Lincoln, Nebraska*

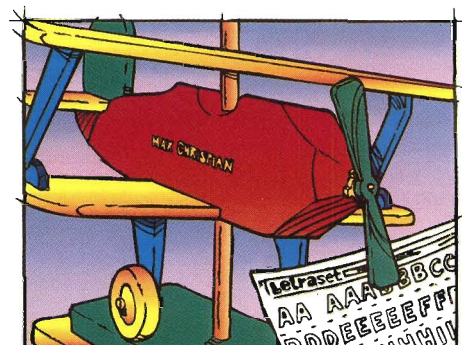
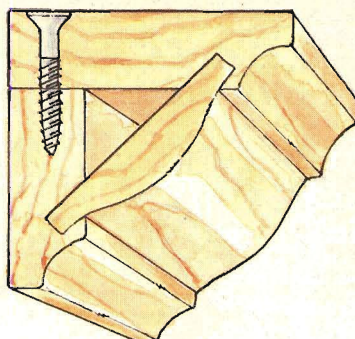
PICK OF THE TRICKS



Homemade Crown Moldings

I've found a simple way to make attractive crown moldings that are strong and easy to install. First, I draw a full scale cross section of the molding, then I use a raised panel cutter to mill both edges of a piece of stock for the center section. Next, I rout the edge of the top and bottom pieces and cut grooves at the appropriate angles to hold the center section. The pieces are easy to assemble with glue and screws.

*Ken Lambie
Redmond, Washington*



What's in a Name?

I made lamps for my grandchildren and applied each child's name to the side of the plane on their lamp. To label the planes I coated the name area with yellow spray paint, then I used stick-on letters (available at art supply stores) to spell the name. Next, I spray painted the body of the plane red. When the paint dried I removed the stick-on letters and was completely delighted with the results.

*Tom Jones
Mt. Prospect, Illinois*

Rust Never Sleeps

I recently moved into the mountains and, unfortunately, my cast iron machinery tables began to rust in this new climate.

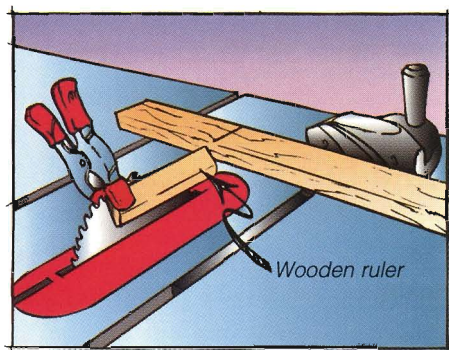
In my desperation to find something to clean off the rust, I fell upon our box of ceramic supplies, which contained chunks of K23 fire brick. I will never use anything else to clean my tables. It took off the rust quickly and left the tables looking like new, without scratching like sandpaper. This brick wears rapidly, so new cutting edges are continually exposed and you can shape it to work on irregular surfaces. Wax on the table will soon load the brick, but one swipe across a coarse sanding disc (when it's not running) will wipe it clean.

K23 brick is available at most ceramic supply houses. K28 brick, which is much harder and more abrasive, is also available.

*Bob Calvert
Squaw Valley, California*

The Case of the Disappearing Appliance

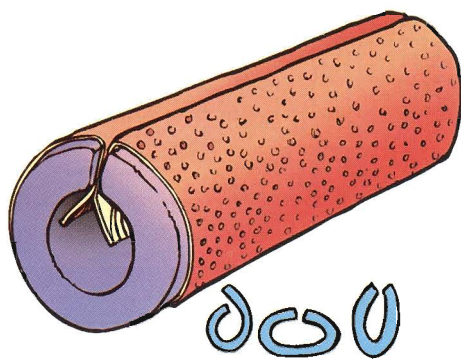
By Al Wolford



Accurate Bevel Cuts

Aligning a workpiece with the saw blade for a bevel cut can be difficult using just a miter gauge. Not wanting to make a new auxiliary fence for just one cut, I clamp a wood ruler to the blade with a spring clamp, then align the workpiece with the protruding straight edge.

*Jacob Schulzinger
Houston, Texas*



Inexpensive Contour Sanders

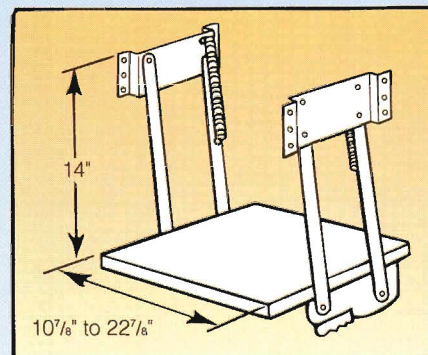
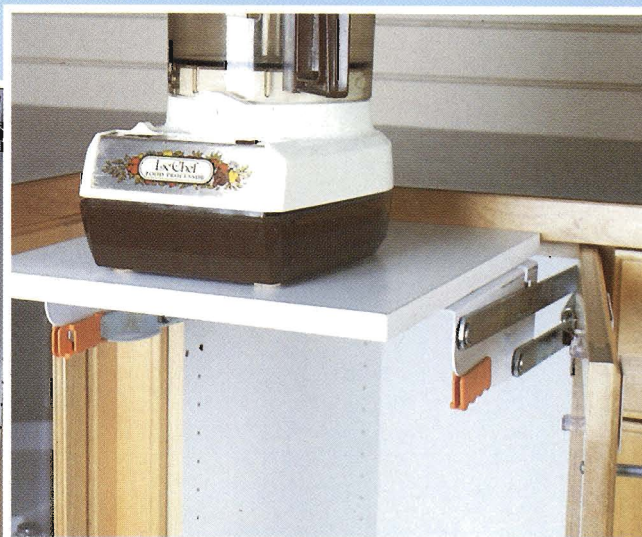
Hot water pipe insulation (available at building supply stores) works well for holding sandpaper while hand sanding irregular shapes. Insulation tube sanders are flexible enough to conform to many unusual surfaces, yet they have just enough density to maintain their shape once it has been formed.

*Richard H. Dorn
Oelwein, Iowa*

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.



If storing an appliance is a problem in your kitchen, a swing-up shelf might be the perfect solution. This mechanism keeps the appliance out of sight, yet within arm's reach at all times.



Where hardware is concerned, the kitchen is king. No other room presents more challenges, more headaches and more triumphs for hardware answer men like me.

The most commonly asked questions I hear about kitchens is how to deal with clutter, in particular the storage of small appliances. They take up precious space and aren't used that often, yet they need to be accessible. My favorite suggestion is the use of a swing-up shelf. A swing-up shelf will store an appliance out of sight in a cupboard, but still within easy reach. By releasing a lock the spring assisted arms raise the shelf to countertop level. Not only is this convenient, but it's also a back saver.

Use of a swing-up mechanism isn't limited to kitchen appliances. Storing typewriters and computer keyboards are just two other possibilities. One

fellow I talked to wanted his everyday fry pans and pots more readily available. I recommended this swing-up mechanism and now, instead of bending over to dig in a cupboard, his most essential cooking tools are delivered to him at counter height.

This heavy duty swing-up mechanism is capable of lifting 25 pounds, and will store items up to 13" tall. The hardware kit comes with two arm brackets, but no shelf, which allows you to build a platform specially for your space.

Al is the technical service manager at The Woodworkers' Store. Send your hardware questions or comments to Al care of Today's Woodworker, Dept. HH, Rogers, MN 55374.

Rush Weaving: A Step by Step Primer

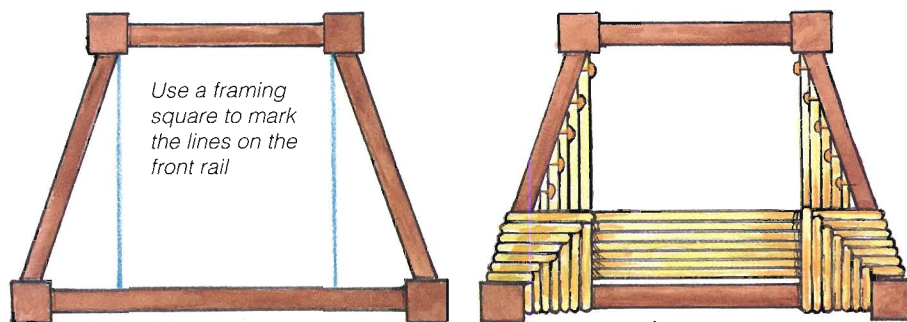


Figure 1: To square the weave, make marks on the front rail that are aligned with the ends of the back rail (at left), then weave individual strands of rush until you reach the marks (at right), filling in the front corners of the seat as you go.

As with so many woodworking firsts, the use of rush for seat coverings dates back to the time of the Egyptian pharaohs, around 4000 B.C. For thousands of years plants such as cattails, bulrush and marsh flag have been harvested for making natural rush. Although these harvests still continue today, natural rush has been largely replaced by fiber rush, which was developed in the early 20th century.

Fiber rush is a tough, resilient product made of tightly twisted paper. It's easier to work than natural rush, comes in tremendously long strands and is regarded as the most appropriate choice for the beginner. Of the five different thicknesses that fiber rush is available in, the 5/32" size is best for general work. To imitate the look of natural rush, fiber rush is available in a variegated cord containing brown, yellow and green paper. This type of rush, along with the popular golden yellow variety, is the most durable. Kraft brown rush is the least durable. When buying material, it's good to know that two pounds, or 400 feet, of 5/32" rush will cover an average chair, but only experience will tell you how much you'll need for a specific project.

Squaring the Weave

The key to weaving rush is having a seat area that's as close to a square or rectangle as possible. On the stool project featured in this issue (see

page 13) this is easily accomplished because the seat was built in a rectangle. The seat of a standard chair, however, is typically wider at the front than the back. To weave this kind of flared seat, therefore, the first order of business is filling in the outside triangles; a process called squaring the weave (See Figure 1).

To begin squaring the weave, draw lines on the front rail that are square with each end of the back rail, as shown in Figure 1. These lines mark the inside edges of the imaginary triangles and the points at which you can stop the squaring weave. Start by tacking the end of a ten foot long rush strand to the left side rail about 2" from the leg and start your weave. Go over and around the front rail, then over and under the side rail (the same side rail the tack is driven into). Next, pull the rush across the chair to go over and around the opposite side rail, then over and under the front rail. Tack the end of the strand to the right side rail 2" back from the leg and cut off the excess.

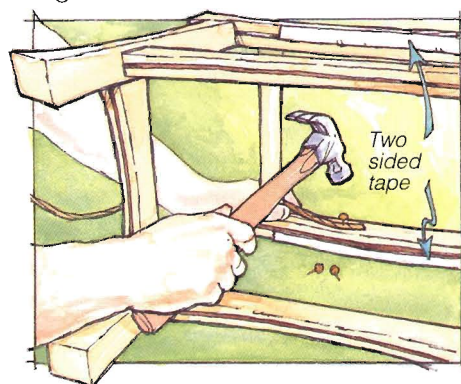
Continue the squaring process by tacking a second strand to the left side rail just behind the first, and repeating the same weave pattern. Weave as many strands as are necessary to reach the lines on the front rail, making sure all the strands are spaced uniformly and pulled tight, as shown in Figure 1 above.

Starting the Stool

Once you've squared the weave, most rush projects are essentially the same, including the stool on page 13 of this issue. Before you actually begin weaving the stool seat, score the bottom of the stool's curved rails with a file or just apply double-coated carpet tape, as shown in Figure 2. The extra gripping action gained by filing the rail or adding tape keeps the rush from slipping during the weaving process and later when someone is seated on the stool.

Cut about 25 feet of rush from your spool and tack one end to a side rail a few inches inside the leg, as shown in Figure 2 (or next to the last of the squaring strands on a chair). Strands over 25 feet long are difficult to handle and often become tangled. If the rush is a little stiff, moisten it with a mister to make it more manageable.

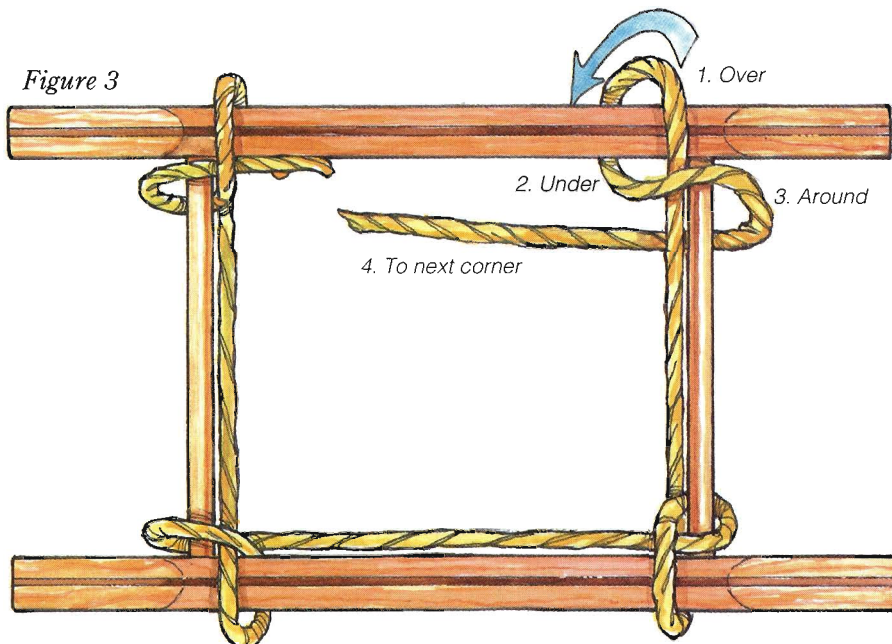
Figure 2



Begin weaving the stool seat by wrapping the strand over and around the nearest end rail, and then around the side rail, as shown in Figure 3. After completing the first course, press the rush tightly into the corners with a small wood wedge and pull the strand taut.

Weave a second course right next to the first and tighten it with the wedge, then a third course, and so on until you reach the end of the strand. As you tighten the strand, avoid overlapping or crushing the rush in the

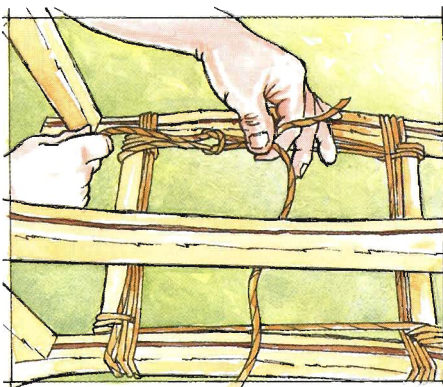
Figure 3



corners, and take care to keep the weave square. Try not to tear the rush, but if a tear does occur, remove the damaged section and tie in a new piece of rush or pull back to the last break in the line.

When you reach the end of the strand, tie on a new 25 foot piece with a square knot, making sure to pull the knot tight so it won't sag later. A spring clamp is useful for holding the end of the woven strand tight while tying on the new piece of rush. It's important to position all the knots well away from the corners so they won't interfere with the weave, as shown in **Figure 4**. But don't worry about the knots showing, for the corner weaves will eventually cover them all.

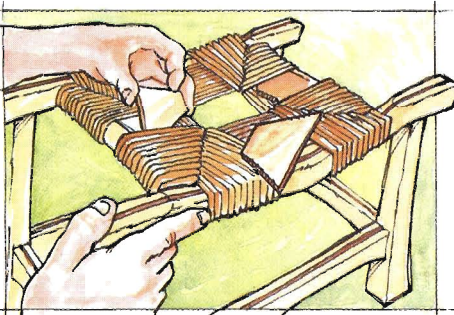
Figure 4



Stuffing the Weave

To give a rush seat more loft and make it more comfortable, slip corrugated cardboard between the layers in the weave (keep the corrugation lines running parallel with the adjacent rail). Begin inserting the cardboard when you've woven about one half to two thirds of the seat.

Figure 5

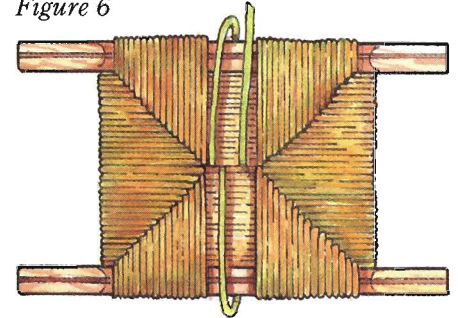


Cut eight triangular cardboard pieces to fit into the weave, as shown in **Figure 5**—clip the leading point off each piece so it won't interfere with the weave as you reach the center of the stool. Working with the stool upside down, slip a cardboard piece into each weave section, then turn the stool over and install the other four pieces. Make the next eight cardboard triangles a little smaller, and install them the same way, and the next ones smaller yet.

Continue adding cardboard until the weave looks even and the strands are pulled tight, then continue weaving the seat, but make sure you can finish with one length of rush—a knot is difficult to hide at this stage.

Once you've covered two of the rails with rush, stop working around the seat from corner to corner and switch to a figure eight weave, as shown in **Figure 6**. Start with the strand going over one rail to the middle of the chair, then slip it through the weave and underneath the seat to the oppo-

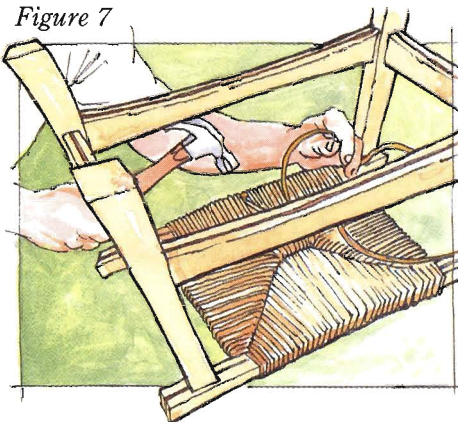
Figure 6



site rail. Reverse the weave back to the first rail to complete one figure eight. Follow this pattern to complete the seat, then tack the strand to a rail and tuck a few inches of excess into the weave, as shown in **Figure 7**.

Fiber rush accepts oil stains and varnish is the recommended finish. If your stool was sealed prior to weaving, you shouldn't have any problem staining the rush, but if a little stain does dry on the wood, a quick wipe with mineral spirits will remove it without any trouble.

Figure 7



A Labor of Love

Build the project that most professionals steer away from and give the newborn in your life his first taste of fine woodworking.

By Rick White

A crib is the perfect project for the hobbyist woodworker. Most professionals find cribs too time consuming to be profitable, especially when the local stores are selling mass produced versions for as little as \$300.00. A woodworker, on the other hand, can invest the money in materials and add his labor to build a priceless crib for a family member or close friend.

The crib I built has many convenient features: both side gates slide up and down, the bed spring height is adjustable and the crib can be rolled from room to room on casters. I chose hard maple for its light color and exceptional durability, and for the fact that it rarely splinters, which appealed to my first concern —crib safety.

The dimensions and construction of this crib, as well as the hardware, meet all current federal safety guidelines for crib construction. In addition to following these guidelines you should also be sure to ease any sharp corners and sand the wood thoroughly before applying a finish like lacquer or polyurethane. The hardware I used is available in a kit (see page 11 for ordering information), and I recommend buying your hardware before cutting any lumber.

Crib safety may not be Sean Kelliher's first concern, but it is for his mom and dad. His parents are also happy with the crib's open, airy design and the look of the smooth maple slats.

Shaping the Slats

The slats in this crib were inspired by the traditional arrow design found on many pieces of furniture. They're also the pattern used on the maple high chair featured in Issue 22 of *Today's Woodworker* (July/August 1992). This pattern is attractive and allows plenty of light to pass into the crib. Another advantage is that these slats join the frames with simple drilled holes instead of mortises, making the project much easier to build.

Select straight grained stock for the slats (pieces 1 and 2), and double-check that it's exactly 1/2" thick (this dimension is critical for successfully machining the slat tenons). I'd suggest cutting three or four extra

in each size just in case some of the pieces don't work out. Next, make templates for both slat sizes by cutting out the **full size patterns** in this issue and tracing them onto some 1/4" plywood. Bandsaw and sand the templates, taking care to shape them accurately. Use the templates to trace the slat patterns onto your stock and then, staying 1/16" outside the lines, bandsaw one edge of each piece.

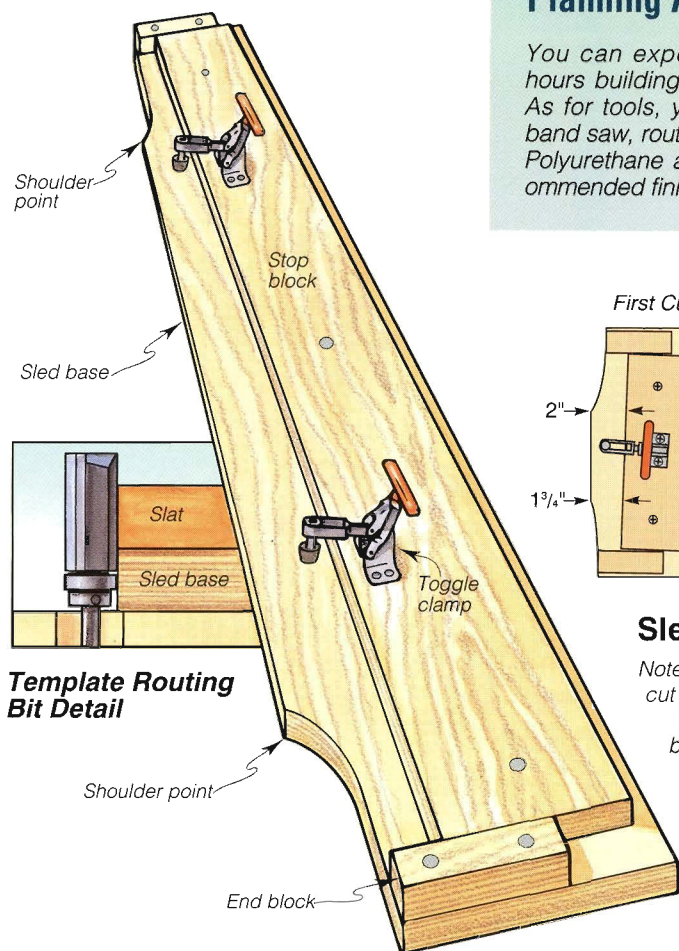
The method I followed for shaping the slats is borrowed from an old patternmaker's technique. If done correctly, you're sure to get slats that are identical in size and shape, without the irregularities or sanding requirements



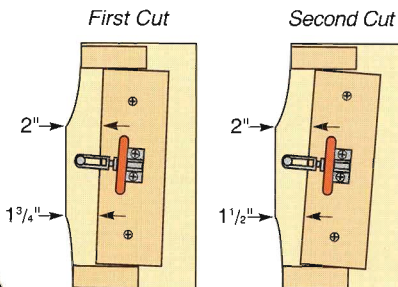
Planning Ahead: The Crib Project

You can expect to spend about 50 hours building and finishing your crib. As for tools, you'll need a table saw, band saw, router table and a drill press. Polyurethane and lacquer are the recommended finishes.

- 25 square feet of 1/2" maple
- 20 board feet of 3/4" maple
- 8 board feet of 1 1/4" maple
- 10 square feet of 3/8" birch plywood
- One crib hardware kit
- One set of locking casters (optional)



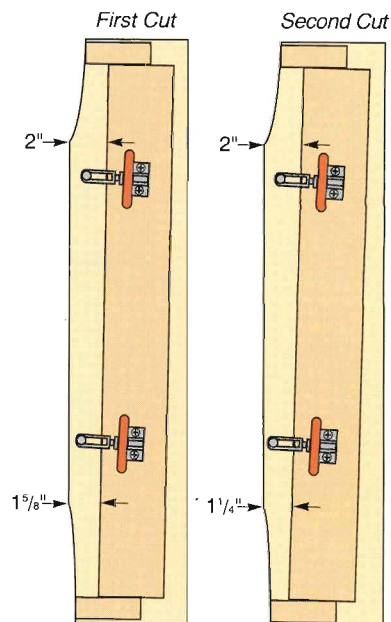
Short Sleds



Sled Details

Note: The first cut and second cut sleds are identical except for the position of the stop blocks. The measurements shown indicate the setback of the stop blocks from the shoulder points of each base.

Long Sleds



common to bandsawing methods. The key to success with this technique is the sleds, which are shown above. Two sleds are needed for each slat size (for cutting each edge on the pieces).

Cut the four sled bases out of 1/2" thick plywood (see **sled details**), then center the slat templates along one edge of each base and trace around them. Now carefully bandsaw and sand the curves along the outside edge of each base. For holding the slats on the sleds, toggle clamps are ideal since they free your hands during the routing operation. Mount a pair of toggle clamps on a 1/2" thick plywood stop block for each sled and secure them to the sleds, as shown in the **sled details** above. (You can use one pair of clamps and exchange them from sled to sled as needed.) Next, position a slat on each sled

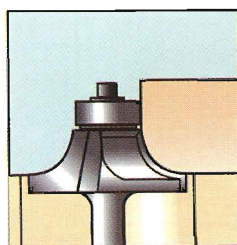


Figure 1: Raise the 1/4" roundover bit to cut half the slat's thickness.

to line up and secure the small end blocks to the bases.

Chuck a template routing straight bit (see **bit detail** above) in your router table and adjust it so the bearing rides against a sled base. Now start clamping slats to the **first cut sleds** and rout the edges that you bandsawed earlier. When you've completed the first cut on all 52 slats, bandsaw the second edge on each one (staying 1/16" outside the lines again). Now clamp them to the **second cut sleds** to complete the routing operation.

Set the sleds aside and exchange the template bit for a piloted 1/4" radius roundover bit. Adjust the bit so it rounds over half the thickness of each slat, as shown in **Figure 1** at left. Rout all the slat edges, then sand them with 100 grit paper. You'll need to perform one more operation on the slats, but not until after the holes are drilled in the crib rails.

Machining the Posts and End Rails

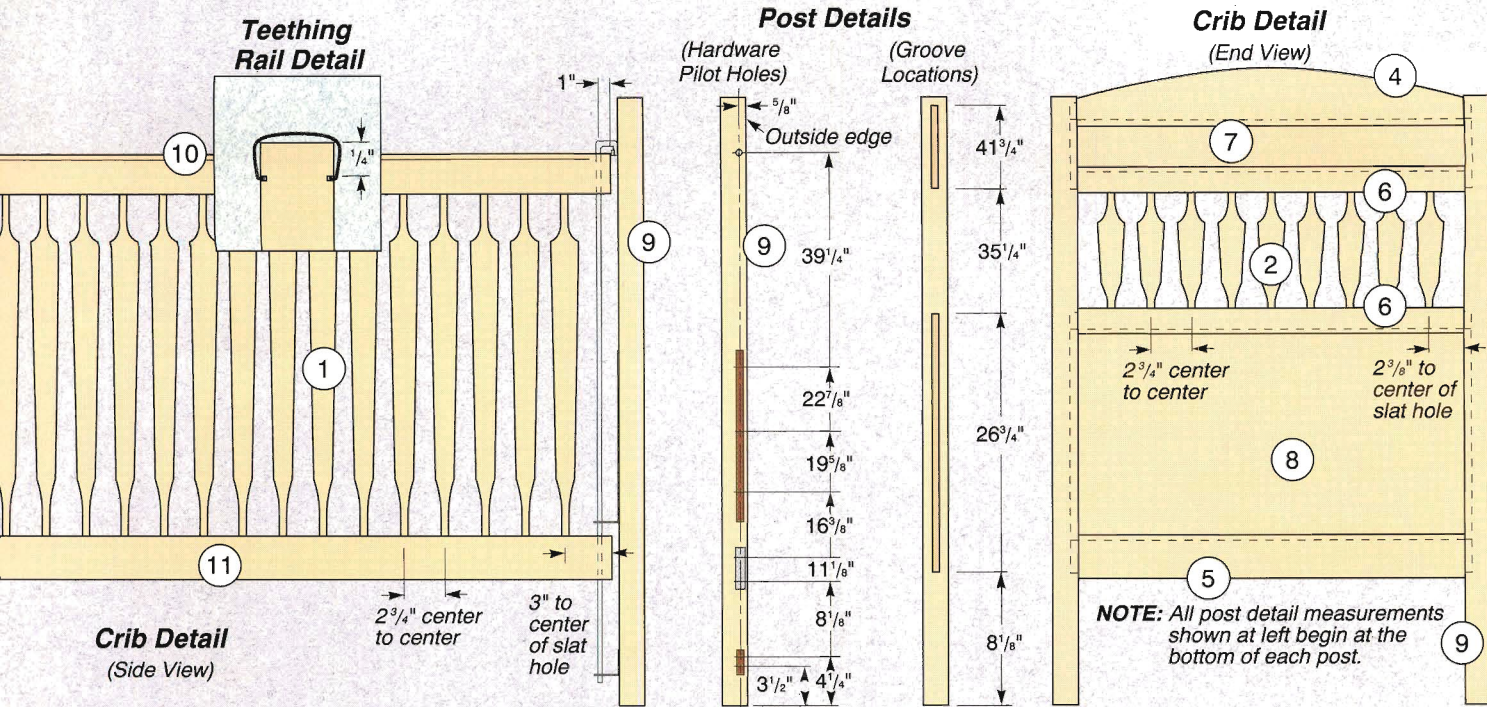
Most of the crib hardware, and all of the end rails and panels (pieces 3 through 8) join the corner posts

(pieces 9) with tenon and groove joints. Since the end rails require some of the same machining as the posts, cut all these pieces to size.

Following the **post details** on page 10, layout the pilot holes for the hardware and the grooves for the end rail and panel joints. Mark the ends of the groove layouts on three sides of each post. Now clamp a fence to your router table to center the posts on a 3/8" straight bit, and mark the size of the bit on the router table so you can see where to begin and end the drop cuts (**See Figure 2**). Rout the 1/2" deep post grooves in 1/4" deep passes, setting each post onto the bit to begin the



Figure 2: Clearly mark the end points of all the post grooves so you can start and stop your drop cuts at the right spots on the router table.



cut and raising the post off the table when the layout line meets the bit line. Once the post grooves are completed, reset the fence and rout grooves for holding the panels in the appropriate edges of the end rails. Wrap up this step by drilling the pilot holes in the posts, including a hole in the bottom end of each one for the caster socket (provided you choose this option).

Cutting Tenons on the End Rails

The most important joints in this project are where the end rail tenons slip into the post grooves. These joints hold the end assemblies together, which support the rest of the crib. You've already routed the grooves in the posts, so now you can cut the tenons on the end rails with the table saw. Raise a 1/2" dado blade 3/16"

and move the fence right up to the blade after clamping on a wood face. Cut a tenon on a test piece (make sure it's the same thickness as the rails) and check its fit in a post groove. Continue cutting scraps until you get a perfect fit, then cut the rail tenons. Trace the **full size pattern** of the upper end rails onto the appropriate stock and bandsaw these pieces to shape, then complete all the end rail tenons by handsawing 1/4" deep shoulders on all the ungrooved rail edges.

Drilling the Slat Holes

The only pieces left to cut are the plywood panels (pieces 7 and 8) and the gate rails (pieces 10 and 11). Cut the four panels from a sheet of 3/8" Baltic birch plywood (which will closely match the maple in the rest of the project), then cut solid stock for the rails.

Now prepare your drill press to bore

all the holes in the gate rails and middle end rails (pieces 6). To evenly space the holes, make the simple fence and the spacing jig shown in **Figure 3**. Make the fence 3" tall and drill a 7/16" hole in the center of the 2 1/4" x 2 1/4" spacing jig. Clamp the fence to the drill press table so the rails will be centered under a 7/16" bit. On the gate rails, layout the guide rod hole and the first slat hole at each end (see **gate rail details** at left). Drill a 5/8" deep slat hole, then move the rail exactly 2 3/4" to the left. Slip a 7/16" x 1" bolt into the spacing jig and then into the gate rail hole you just drilled, and screw the jig to the fence. Drill the next hole, then pull the bolt up and slide the rail to the left until the bolt falls into this fresh hole, and drill again. Continue this process for all the slat holes in the gate rails, then place a 1 1/4" strip under each end rail and follow this same procedure for drilling their slat holes. Finally, switch to a 1/2" bit and drill the guide rod holes through the ends of each gate rail.

The hardware kit includes two plastic teething guards for the upper gate rails. These guards fit into shallow slots that you can cut with a standard table saw blade (see **teething guard detail** above). Once you've cut these slots, sand all the pieces to 150 grit.

Completing the Slat Tenons

When you last worked on the slats, the tenon diameter was probably inconsistent from one piece to another. What you need to do now is

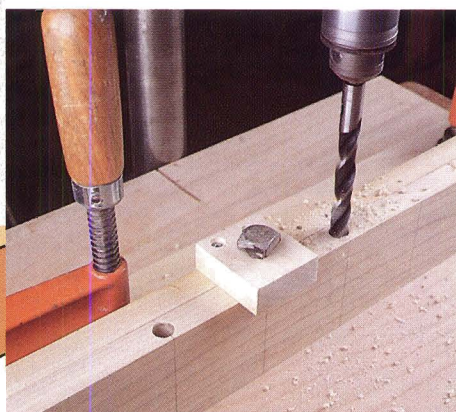
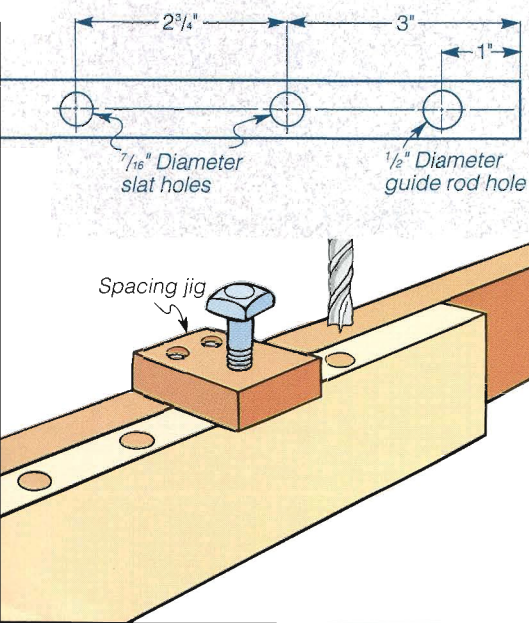


Figure 3: A spacing jig and a 3" tall fence will ensure that the slat holes are positioned correctly without the need for a layout line at each location.

reduce the tenons to 7/16" in diameter and have them all turn out exactly the same. To accomplish this, a pair of jigs are in order.

First make a jig for routing the long slat tenons like the one shown below in **Figure 4**. Cut a dado in the bottom of the 3/4" x 1 3/4" x 24" jig base for chip relief and be sure to maintain a 1/2" gap when nailing the 1/2" thick spacers to the base. To set up your router table, clamp a stop block to the fence, and secure the fence so the block just grazes the bit. Clamp the jig right next to the bit, opposite the fence. Now raise the bit so it's just a hair higher than the jig base and insert a slat end into the jig. Slowly rotate the slat to rout the tenon. Check the fit of the tenon in a rail hole and, if it's a good fit, proceed with the rest of the tenons on the long slats.

A narrower jig must be made for routing the tenons on the short slats. Use a 3/4" x 3/4" x 24" base, then set it up as you did with the first jig. Rout one tenon for a test run, then continue after checking its fit in a rail hole.

Assembly

Gluing up the four subassemblies (two ends and two sides) requires a little organization, so separate the pieces for each one and gather your clamps, glue and a rubber mallet on your workbench. Beginning with one end assembly, glue the short slats into the holes in the two middle rails. Next, spread glue in the rail grooves and in the grooves of one post. Insert the rail tenons into the post grooves and slip the panels into place. Now put glue in the grooves of a second post and clamp the full assembly together. Measure the diagonals to ensure that the frame is square, then move on to the other end assembly. To assemble the gate sides, squirt glue into the holes in one lower rail and insert the slats, then glue and clamp an upper rail into place.

Once all the subassemblies are glued together, clean off any

(continued on pg. 12)

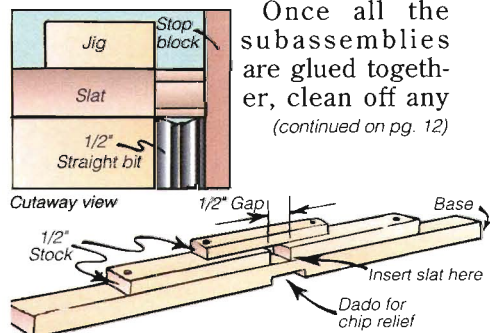
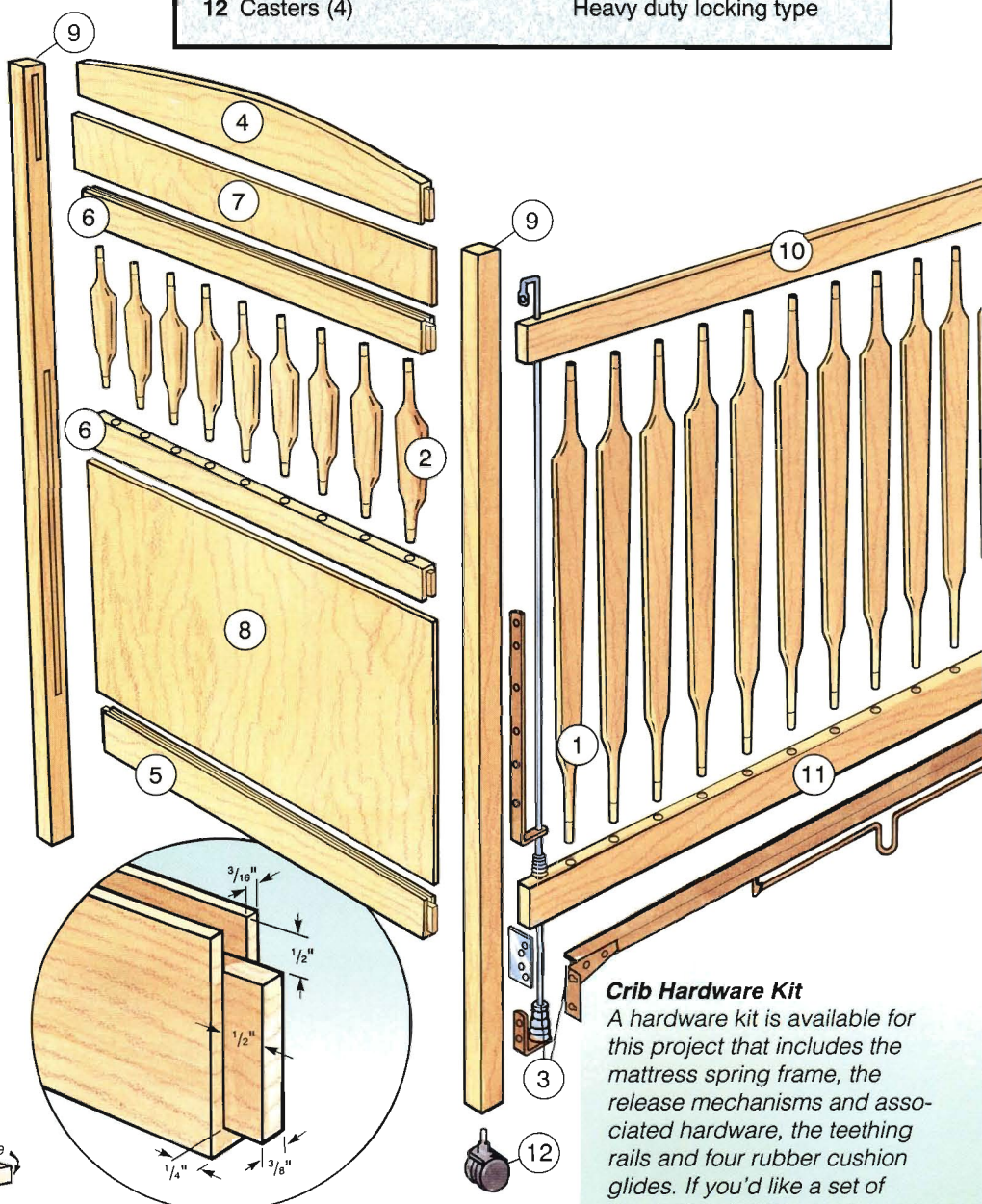


Figure 4: To create perfectly matched tenons, feed each slat through this jig until it hits the stop block.

MATERIAL LIST

	T x W x L
1 Long Slats (34)	1/2" x 2" x 24 3/4"
2 Short Slats (18)	1/2" x 2" x 9"
3 Crib Hardware (1 set)	see hardware kit below
4 Upper End Rails (2)	3/4" x 4" x 27 3/4"
5 Lower End Rails (2)	3/4" x 3" x 27 3/4"
6 Middle End Rails (4)	3/4" x 1 3/4" x 27 3/4"
7 Upper End Panels (2)	3/8" x 27 3/4" x 4 1/2"
8 Lower End Panels (2)	3/8" x 27 3/4" x 14 5/8"
9 Corner Posts (4)	1 3/4" x 1 3/4" x 42"
10 Upper Gate Rails (2)	3/4" x 3" x 50 1/2"
11 Lower Gate Rails (2)	3/4" x 3" x 50 1/2"
12 Casters (4)	Heavy duty locking type



Rail Tenon Detail

Crib Hardware Kit

A hardware kit is available for this project that includes the mattress spring frame, the release mechanisms and associated hardware, the teething rails and four rubber cushion glides. If you'd like a set of heavy duty locking casters as shown on our crib, please order these separately.

#30858 (use order form)\$59.95
 #24562 (four casters)\$12.95
 #49072 (template bit).....\$26.95

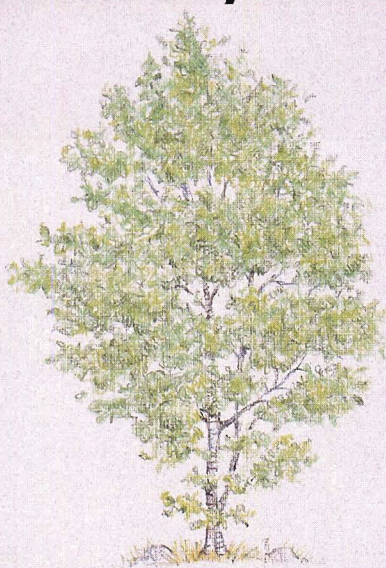
Red Alder (*Alnus rubra*)

By Gordon Hanson

You might say that alder has left its unique footprint on the history of the world, for this easily carved wood has been the top choice of clog-makers for hundreds of years. For the most part, alder's role in today's world can still be described as somewhat pedestrian. It often makes up the core material in high quality plywoods like Baltic birch, and is widely used for industrial purposes like pallets, broom handles and commercially made toys.

On the other hand, red alder's abundance and prolific growth characteristics (especially in the Pacific Northwest) have given lumbermen a reason to take a new look at its potential as a wood resource. It grows like a weed, doing especially well on logged out or burned forest land. In fact, it often overtakes the efforts of foresters trying to replant softwood species like fir and spruce. Alder's ability to resist the ravages of forest fires has also contributed to this newfound respect.

Alder could also be called the chameleon wood, for it's widely used to imitate some mighty pricey competition, including walnut, mahogany and cherry. Alder's ruddy coloring and indistinct grain pattern permit a creative finisher to



mimic the hues of these other species, and it's hardness makes it a suitable wood for furniture and millwork. Alder is also popular with turners, particularly mass production shops, because it requires little sanding and has a uniform grain pattern, which translates to little tearout on the lathe.

From Alaska to California, red alder is the most common commercial hardwood. This cousin of birch and aspen generally prefers wet climates and usually grows in groves along stream banks or on moist hillsides. A mature alder can reach a height of 100 feet with a trunk diameter of 36". Alder is most similar to butternut in weight and density, although it's poorer durability more closely resembles poplar. One striking feature with alder is the lack of color variation between its sapwood and heartwood, making it easier to mill thick lumber from an average size log —another favorable characteristic for turners.

Given that our timber resources are growing ever scarcer, and that research is underway to find fast growing, hardy woods, it's no wonder that both foresters and woodworkers are taking another look at alder.

From the evidence already in, it seems that we've been overlooking a valuable species.

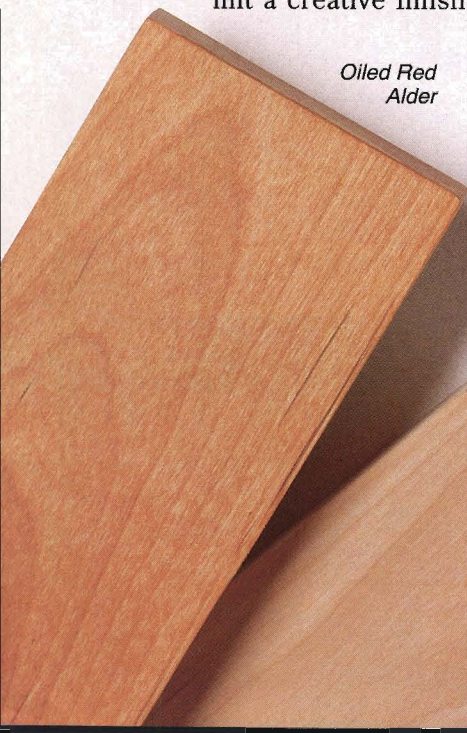
(continued from page 11)

squeeze out and ease all the corners and edges. I sprayed my crib project with a durable lacquer, but if this is out of the question for you, I recommend brushing on two coats of polyurethane.

Installing the hardware is just like connecting the dots at this point. You've already drilled the pilot holes, so drive the caster sockets into the bottom of each post and mount all the post hardware. Next, secure the metal bed frame parts to the end assemblies —suddenly your project will look like a crib. Drill pilot holes to secure the gate catches to the inside of the lower gate rails as described in the hardware instructions, then slide the teething guards onto the upper gate rails. Insert the guide rods through the gate rail holes, installing the springs as you go, and mount them to the posts. Wrap it all up by pressing the caster posts into the sockets.

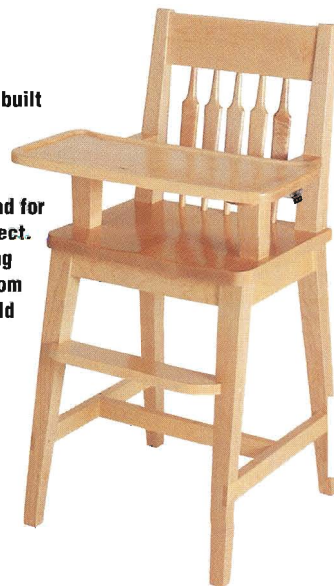
Before closing the book on this project, work through a quick check list to be assured that your crib is completely safe. For example, the top of each post should be flush with the upper end rails, and there mustn't be any wood parts or screws sticking out. Either of these hazards might catch on a baby's clothing. To make sure a baby remains safely in the crib, no space between the slats should exceed 2 3/8". Once the crib passes your safety test, you can pass along your labor of love.

Oiled Red Alder



Unfinished Red Alder

Once you've built the crib you might be looking down the road for another project. This matching high chair from Issue 22 could be just the ticket.



Rush Covered Stool

If you thought rush weaving was just for covering antique chair seats, see what this age old technique can do for a fresh design.

By David Larson

Not long ago I had my first experience working with rush when I recovered the seats on a set of flea market chairs. First I studied the original rush, then, after stripping and refinishing the wood parts of the chairs, I wove the new rush in exactly the same pattern. What an eye opener. The weaving process went quickly and seemed nearly foolproof.

This small stool, which I built shortly after completing the chairs, demonstrates that rush weaving is not just for antiques. I had been thinking about a stool project for a long time, but never landed on the right design. After my trial run with rush this idea sprung to mind. Now I have the perfect seat for pulling on my boots.

Laying the Groundwork

From the outset I wanted this project to have enough flair to distinguish it from a run-of-the-mill store bought stool. By laminating the rails and stretchers (pieces 1 through 6), and later cutting tapers on the legs (pieces 7), I created details that make it clear this is a handmade original.

Begin the project by cutting oversized 1/2" thick cherry and 1/8" thick walnut for gluing into the rail and stretcher laminations. Bear in mind that the laminations will be cut to size after the glue dries. Spread glue on all the mating surfaces and, after wiping off most of the glue squeeze out, leave the assemblies clamped overnight. The next time you come to the shop joint one edge of each piece and cut your stock to size.



This rush covered stool makes a distinctive accent piece in an entryway, and it's also a perfect place to sit while pulling off your winter boots.

Most of the pieces in this project are shaped, but don't be too eager to bandsaw them at this early stage. Instead, cut as many joints as you can while the stock is still square, beginning with the mortises. Considering that some mortises are angled and others are square, the tool of choice for roughing all of them in is the drill press. Once you've bored the bulk of the waste out of each mortise you can square the walls with a chisel.

Layout the mortises on the rails, as shown in the **full size pattern** between pages 12 and 13, then clamp a fence on your drill press table to center the bottom edge of the rail stock under a 1/2" brad point or Forstner drill bit. Now tilt your drill press table 7° and bore 1 5/8" deep holes to hog out the mortise waste. (Double-check the entry angle to make sure it's correct for each mortise.) Drilling these holes extra deep accounts for the waste that you'll cut away later when shaping the rails.

Once the waste in the rail mortises is drilled, cut the legs to size and layout the leg mortises, as shown on the **full size pattern**. Drill the 13/16" deep angled mortises just as you did those in the rails, then reset your drill press table to 0° and bore out the waste for the end stretcher mortises.

After the mortises are roughed in, clean out the remaining waste with your chisels. One helpful trick I recommend for paring the ends of the angled mortises is to use a guide block to position your chisel at the correct angle, as shown in **Figure 1**.

There's still a pair of mortises left to drill on the inside face of each rail for the support dowel joints (pieces 8). Layout the drilling locations for the holes as shown on the **full size**

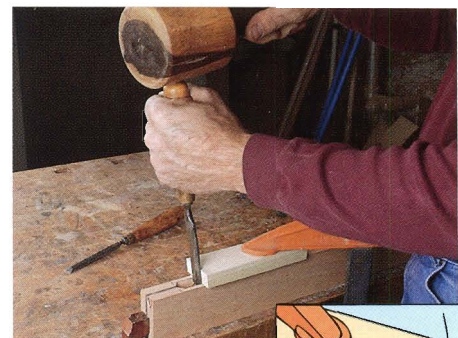


Figure 1: A guide block with one end cut at 7° is a real help when paring the ends of the angled mortises.

pattern of the rail, then use your drill press to bore 1/2" diameter by 3/4" deep holes. Fortunately, these holes need to remain round, so no chiseling is needed.

Planning Ahead: The Rush Stool Project

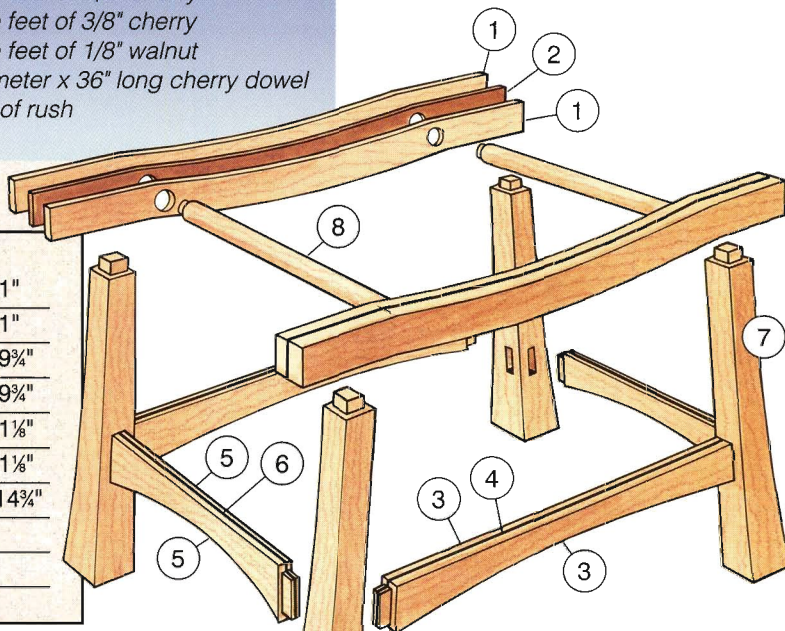
Building the stool will take about 15 hours to complete, and you'll need another two hours to weave the rush. Besides a table saw, the other essential tools required for the project are a drill press, a band saw and a router table. Watco Oil is the recommended finish.

- 3 board feet of 1 1/4" cherry
- 3 square feet of 1/2" cherry
- 4 square feet of 3/8" cherry
- 3 square feet of 1/8" walnut
- A 1" diameter x 36" long cherry dowel
- 400 feet of rush

MATERIAL LIST

	T x W x L
1 Rail Laminations (4)	1/2" x 2" x 21"
2 Rail Laminations (2)*	1/8" x 2" x 21"
3 Side Stretcher Laminations (4)	3/8" x 2" x 19 3/4"
4 Side Stretcher Laminations (2)*	1/8" x 2" x 19 3/4"
5 End Stretcher Laminations (4)	3/8" x 2" x 11 1/8"
6 End Stretcher Laminations (2)*	1/8" x 2" x 11 1/8"
7 Legs (4)	1 3/4" x 1 3/4" x 14 3/4"
8 Support Dowels (2)	1" x 11 1/8"
9 Rush (1)	400 feet

(*use walnut for pieces 2, 4 and 6)

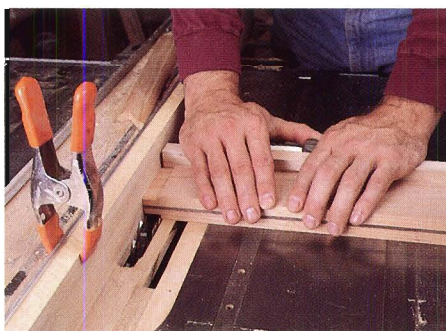


Cutting the Tenons

Like the mortises in this stool, some of the tenon shoulders must be cut at a 7° angle, while others should be cut square. Cutting square shouldered tenons on the end stretchers is a process you've probably done many times using a 3/4" dado blade in your table saw (See **Figure 2**). Cutting the angled shoulders, however, may be less familiar. To make this process easy I built a crosscutting jig that rides in my table saw's left miter gauge slot and has two fences angled 7° in opposite directions (see **jig drawings** at right). The success of this jig depends on two things: the jig must be square to the blade, and the slope of the two fences has to be exactly the same. I recommend that you set a bevel gauge to 7°, then keep it at that setting throughout the project. This will provide a consistent reference for setting the fences and laying out the tenon shoulders. Once the jig is made, run it through a 3/4" dado blade so you can use the edge of the jig to align the tenon layouts with the blade.

Use the jig for cutting the side stretcher tenons first. Set the blade height and place a stretcher against one of the jig fences. Align the shoulder layout line with the edge of the jig (make sure the slope of the layout line matches the angle of the cut) and screw a stop into the jig at the other end of the stretcher, as shown at right.

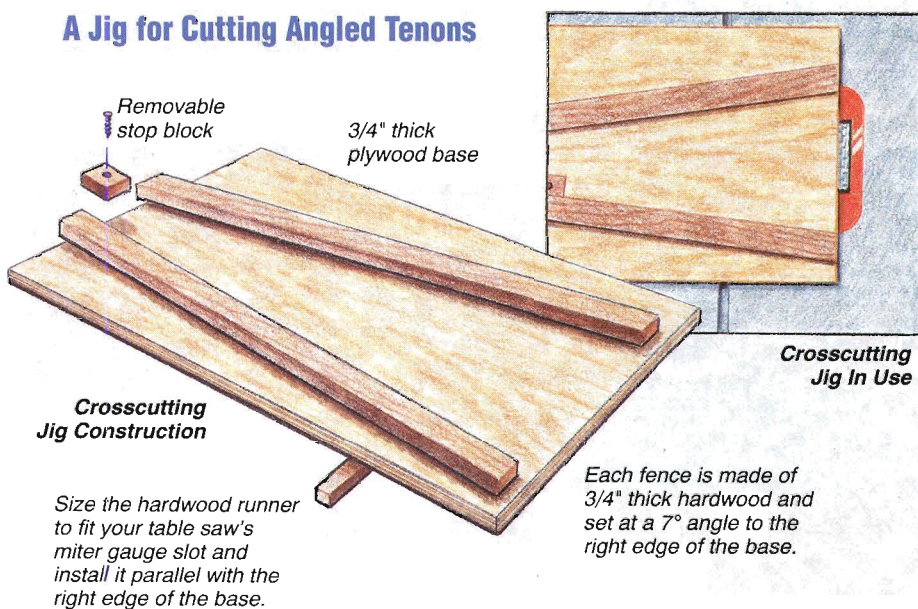
Figure 2: To cut the square shouldered tenons on the end stretchers, raise a 3/4" dado blade 3/16" and set the fence (with an auxiliary face) right next to the blade.



Cut the first shoulder, then turn the stretcher over and cut an identical shoulder at the other end. Repeat these steps on the second stretcher, and follow the same procedure for cutting the remaining shoulders with the second fence. Now remove the stop block and raise the blade to trim the tenon ends parallel with the shoulders. Since the side stretcher tenons will butt into the end stretcher tenons, miter their ends at 45°. Cut all the edge shoulders by hand.

Cutting a tenon on the end of each leg presents another challenge. Due to

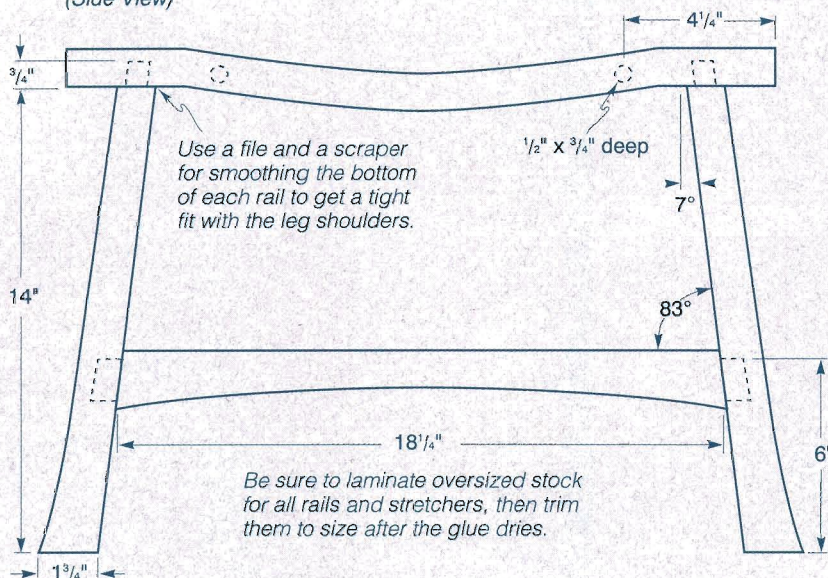
A Jig for Cutting Angled Tenons



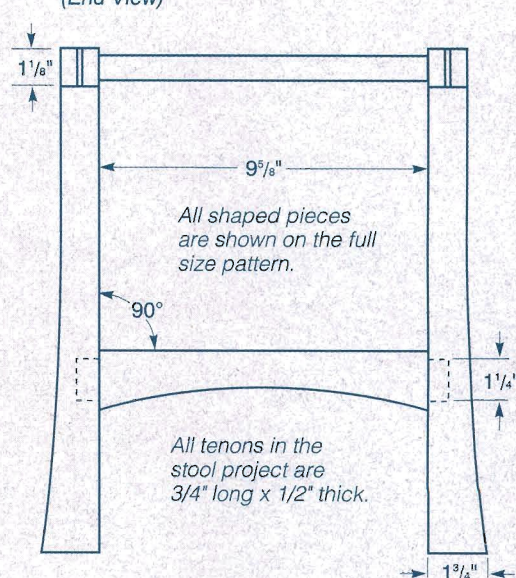
Size the hardwood runner to fit your table saw's miter gauge slot and install it parallel with the right edge of the base.

Each fence is made of 3/4" thick hardwood and set at a 7° angle to the right edge of the base.

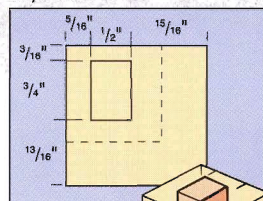
Rush Stool (Side View)



(End View)



Top View



Leg Tenon Details

When laying out the leg tenons bear in mind that two sides of each leg will lose material during the tapering operation. To plan for this material loss, offset the tenon layouts toward the inside corner of each leg, as shown in the top view above.



the taper on two sides of each leg (which you'll cut later), the tenons are situated near the inside corner of each leg. Consequently, the shoulder depths vary for each side of the tenons (see **leg tenon details** at right).

Layout the leg tenons and label the depth of each shoulder cut, then set the blade accordingly when you make the shoulder cuts. In all other respects, follow the same procedure for cutting these shoulders as you did for the stretchers.

Forming $\frac{1}{2}"$ tenons on the support dowels is a job for the router table (See **Figure 3**). Chuck a $\frac{1}{2}"$ straight bit in the router table and clamp the fence $\frac{1}{4}"$ from the bit. Now slide your stock into the bit while keeping it in contact with the fence. Slowly spin the dowel to cut away the waste until it reaches the stop block. I recommend trying this on an extra piece of $1"$ diameter dowel first until your sample tenon fits the rail sockets just right.

Bandsawing the Shaped Pieces

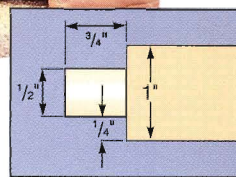
All the joinery groundwork is now complete and you're almost ready to start the assembly. First layout the curves on the rails, stretchers and legs (see **full size patterns**) and bandsaw them to shape. Drum sand the curves smooth, then use a file and a scraper on the rails to get perfectly flat areas for the leg shoulders to bear against.

I always put my projects through a dry assembly to make sure all the joints fit properly and to organize the clamps and other tools I'll need for the operation. With this project I first put together the sides, then I connected the two side assemblies with the end stretchers and support dowels. Breaking the assembly up like this makes it much more manageable.

Providing that all went well during the dry assembly, glue the stool



Figure 3: Rotate the ends of each support dowel over a $\frac{1}{2}"$ straight bit raised $\frac{1}{4}"$ to form tenons with a router table.



together in the same order. Slice off any glue squeeze out when it dries to a rubbery consistency and sand the stool with 150 grit sandpaper. I finished my stool with three coats of Watco Natural Oil, then rubbed on a coat of paste wax for good measure.

What's left to do? Weaving the rush (piece 9) of course. The step by step method I followed is described in *Techniques* on page 6. Work your way through the process, which takes a couple of hours, and apply oil based walnut stain and two coats of varnish to the rush. When it's all done you'll have a sturdy utility stool and some new skills for rehabbing your own flea market treasures.

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



Early American Plate Rack Shelf

Take advantage of our full size patterns and build your own reproduction of a country classic.

By Chris Inman

One of the most popular reproductions of early American furniture is the plate rack shelf. Their plain design adds rustic charm to any kitchen and the simple construction makes for a perfect weekend project.

Like many colonial pieces, this plate rack has a painted finish. Paint was typically used on projects made with several different woods, like Windsor chairs, or to spruce up less interesting species, like poplar. To its credit, poplar usually has few knots and is a pleasure to work with hand tools.

The drawer fronts on this plate rack are made of cherry and finished with a wiping varnish. The contrast between the paint and the natural cherry is striking and creates a distinctive look for this modern heirloom.

The Shelf Joinery

Poplar is generally available in wide stock, so there's probably no need for any edge to edge joinery in this project. Just cut the stock to overall size for the sides, shelves and dividers (pieces 1-4),

and move right on to cutting the joints.

As is typical of country furniture, the joinery on this plate rack is above all else practical. For instance, the shelf tenons go through the sides to gain all the side grain to side grain gluing surface that's possible (something dado joints wouldn't provide). And by cutting the rail tenons flush with the front face of the stock, the mortises in the side pieces can be positioned further from the back edge, reducing the chance of splitting.

Get started by laying out the mortises in the sides for the shelf tenons, as shown on the **full size pattern** between pages 12 and 13. Make sure to draw the layout lines on both faces of the stock and mark an "X" on the center of each mortise (See **Figure 1**). To help prevent tear out when drilling the mortise waste and to help guide your chisels during the clean up, define the perimeter of each mortise with a 3/4" chisel. Now chuck a 3/4" brad point bit in your drill press and bore out the bulk of the mortise waste (be sure to back up your stock with a

piece of scrap). Chop out the rest of the waste with a set of sharp chisels, working from both faces of the stock.

Cutting the shelf tenons is just like cutting finger joints. Build the **finger joint jig** shown at right, then follow the steps to make sample cuts in scrap wood. Once your sample tenons match the mortises in the sides, proceed with cutting the shelf tenons. Wrap up your work on the shelves by cutting the

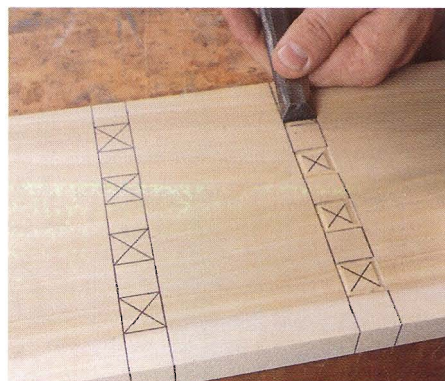


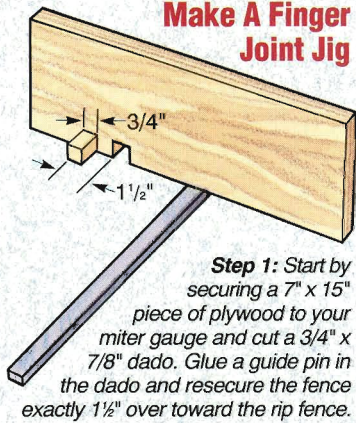
Figure 1: Layout the mortises for the finger joints on both faces of the side stock, then define each mortise outline with a 3/4" chisel.

Planning Ahead: The Early American Plate Rack Project

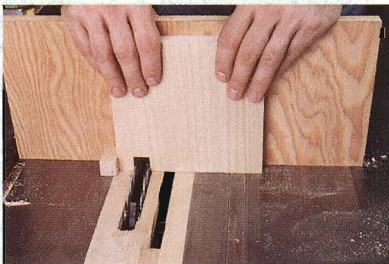
This project will take you about 15 hours to build and requires a table saw, drill press and band saw. The recommended paint is latex enamel.

- 10 board feet of 3/4" poplar
- 3 square feet of 1/2" poplar
- 2 board feet of 3/4" cherry
- 2 square feet of 1/4" plywood

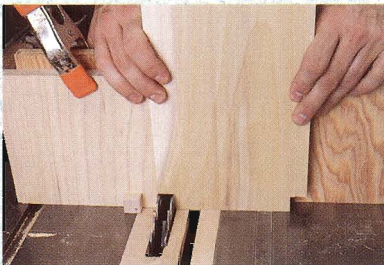
Make A Finger Joint Jig



Step 1: Start by securing a 7" x 15" piece of plywood to your miter gauge and cut a 3/4" x 7/8" dado. Glue a guide pin in the dado and resecure the fence exactly 1 1/2" over toward the rip fence.



Step 2: Cut a scrap piece with the jig to make a spacer for positioning the shelves during the edge cuts.



Step 3: Clamp the spacer to the jig and hold each shelf next to it while making the edge cuts in the shelves.



Step 4: To complete the fingers, remove the spacer, then slip each gap over the guide pin to make the next cut.

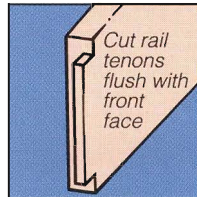
dadoes for the dividers and a groove for the plate rail, as shown in the **detail drawings** on page 18.

Machining the Rails

Joining the upper and lower rails (pieces 5 and 6) to the sides with mortise and tenon joints adds considerable rigidity to the plate rack. As men-

tioned, these joints also are designed to support the weight of the plate rack once it's mounted to the wall.

Cut the mortises using a straight edge guide, a 1/4" straight bit and a plunge router (see the **full size pattern** of the sides for the layout). Square the mortise ends with a 1/4" chisel, then set up your table saw with a 3/8" dado blade for cutting the rail tenons. Clamp a wood face to the fence and position it right next to the blade. Cut a tenon in some scrap wood to test the fit. After fine tuning the set up, cut the rail tenons, as shown above.

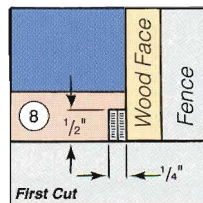


Now clamp a long piece of 1/4" stock on the top rail and use it to form an arc for tracing the curve. (Note: the same curve is used for the lower rail.) Next, trace the pattern for the sides, then bandsaw the rails and sides to shape. Remove the edge shoulder waste on the rail tenons with a hand-saw and sand all the pieces to 150 grit. If all goes well during a dry assembly of the plate rack, glue the carcass together. Be sure to glue the top edge of the lower rail to the lower shelf, which will vastly improve the strength of the assembly.

The Drawers

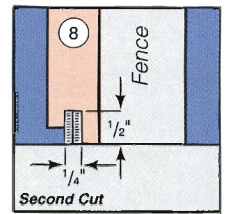
The plate rack drawers are perfect places for storing old silverware and keepsakes that are too fragile to display.

Cut the drawer fronts, backs and sides (pieces 8, 9 and 10) to size, then install a 1/4" dado blade in your table saw for cutting the drawer joints. Begin with the locking joints by cutting a 1/4" wide by 1/2" deep rabbet at the ends of each drawer front (shown above), then move the fence and stand the drawer fronts on end to make 1/4" wide by 1/2" deep second cuts (shown at top right). Next, make cuts in the sides for the front locking rabbets



and the back dadoes (see **drawer joint details** on page 18).

Finish by cutting 1/4" deep grooves for the drawer bottoms (pieces 11) 1/4" from the bottom edge of each piece. Glue the three drawers together, checking to see that they're square. Later, slip the drawers into the plate rack and glue the drawer stops (pieces 12) to the lower shelf, as shown in the **exploded view**.



Finishing

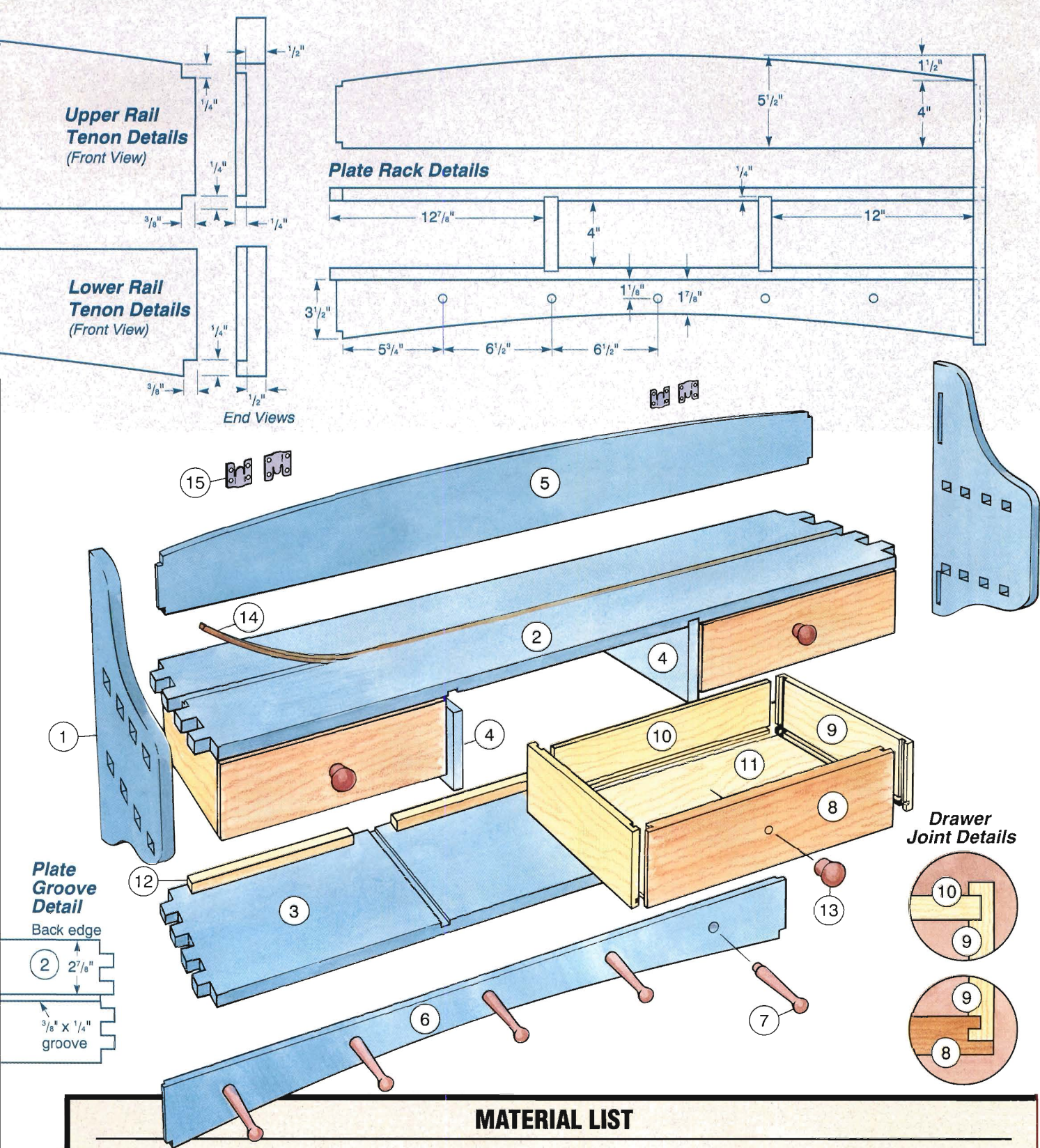
The painting technique used on the plate rack carcass allows the grain and finger joinery to show through the finish, creating a wash effect similar to what you find on many antiques. To finish your project this way, apply latex enamel paint with a brush and wipe it off with a rag right away. Paint two coats of another color on the knobs (pieces 13) and pegs (pieces 7), but don't wipe it off (be sure to avoid finishing the peg tenons). The following day, coat the entire project, including the drawers, with an oil based sanding sealer and one application of varnish. The varnish protects the fragile paint from scratches.

Drill holes in the lower rail and glue in the pegs, then secure the knobs to the drawers with #8-1 1/4" screws. Next, cut the plate groove liner (piece 14) to length and press it into the groove in the upper shelf. Now the project is ready to mount on the wall. Determine the stud spacing in your wall and use this measurement to guide the installation of the flush mount hangers (pieces 15) on the back of the upper rail. Once the shelf is mounted these hangers are completely hidden and create only a slight gap between the project and the wall.

Plate Rack Hardware Kit

A hardware kit is available for this project. You get a pair of ultra thin flush mount hangers, 10 shaker pegs, four shaker knobs and a 48" plate groove liner.

Item # 96348 (use order form)\$8.95



MATERIAL LIST

	T x W x L		
1 Sides (2)	3/4" x 6 3/4" x 17 1/4"	9 Drawer Sides (6)	1/2" x 4" x 6"
2 Upper Shelf (1)	3/4" x 6 3/4" x 39 1/4"	10 Drawer Backs (3)	1/2" x 4" x 11 1/2"
3 Lower Shelf (1)	3/4" x 6 3/4" x 39 1/4"	11 Drawer Bottoms (3)	1/4" x 5 1/4" x 11 1/2" (ply)
4 Dividers (2)	3/4" x 6 3/4" x 4 1/2"	12 Drawer Stops (3)	3/4" x 3/4" x 10 1/2"
5 Upper Rail (1)	3/4" x 5 1/2" x 38 1/4"	13 Knobs (3)	Maple; Screw on type
6 Lower Rail (1)	3/4" x 3 1/2" x 38 1/4"	14 Plate Groove Liner (1)	48" long
7 Pegs (5)	Maple; 7/8" dia. x 3 3/8"	15 Flush Mount Hangers (2)	Install with #6 screws
8 Drawer Fronts (3)	3/4" x 4" x 12" (cherry)		

Rediscovering Aniline Dyes

By Bob Flexner

If you've been frustrated while trying to match the color of your new project to a favorite antique, it's probably because you're using the wrong stain. In fact, you may be using a pigment stain when you should be using a dye stain (also called dye).

Common stains use pigment for colorant. These relatively large particles of natural or synthetic earth materials do not penetrate into the wood, but instead lodge in pores and sanding scratches. Dyes, on the other hand, are molecules of color which totally dissolve in a liquid and penetrate the entire wood surface. Dyes give you a more even coloring on coarse woods such as oak because they absorb into the dense areas between the large pores almost as well as they absorb into the pores.

I've always found that imitating turn-of-the-century American oak furniture is easier using a dye than a pigment stain. Dye is capable of darkening wood much more than pigment stains without obscuring the grain. The dark red birch and maple furniture made at the turn of the century and the red 1940s Duncan Phyfe-style furniture were all colored with dyes.

Choosing Dye For Home Shop Use

Synthetic aniline dye is derived from petroleum and was developed in the late nineteenth century. It quickly overcame natural dye in popularity due to its wider range of colors, resistance to fading and ease of use. Contrary to what you may have heard, there is no evidence whatsoever that the aniline dyes available to woodworkers are carcinogenic.

Individual aniline dyes are usually sold in powder form and labeled according to their solvent: water, alcohol, or oil (mineral spirits or lacquer thinner). Some dyes come pre-mixed in a water solution made thinnable with organic solvents. These are called non-grain raising (NGR) dyes.

Generally speaking, water-soluble dyes are more lightfast than alcohol or oil dyes, meaning the colors remain true longer. Dyes dissolved in water are slower drying than the others, which makes it easier to remove any excess or achieve deeper penetration. Using water as the solvent also means these dyes are inexpensive, devoid of toxic fumes, non-flammable, and non-polluting to the atmosphere.

One drawback to water-soluble dyes, however, is that water raises the wood grain. Since sanding after you've applied the dye may remove some of the color, I recommend wetting the wood prior to applying the dye stain. Then, after allowing it to dry overnight, sand the wood smooth using 320 grit or finer sandpaper. This step is called sponging or dewhiskering. Now when you apply the dye, very little grain will be raised.

Mixing Water Dyes

To mix a standard water soluble dye color, pour one ounce of powder into one quart of hot distilled water, preferably in a glass container (a metal can might affect the color). For a darker color, use less water, and conversely, for a lighter color add more water. You can customize a color by first mixing individual dyes in water, then combining the mixes

into one jar. This can even be done using different brands as long as they all dissolve in water.

Measured amounts of one brand of dye and water should produce the same color over and over, but to be on the safe side I always mix plenty of dye to complete a project (dye solutions have an infinite shelf life). I also strain the mixture through tightly woven cheese cloth to remove impurities and any undissolved dye particles, either of which could cause spotting.

Putting the Dye to Work

Apply water aniline dye with a rag, sponge, brush, or spray gun just as you would a conventional pigment stain, and wipe off any excess before the dye dries. (Move fast, for even though water dries slower than other solvents, it still evaporates fairly rapidly.) It doesn't make any difference which direction you apply the dye — it's only important that you wipe off the excess going with the grain.

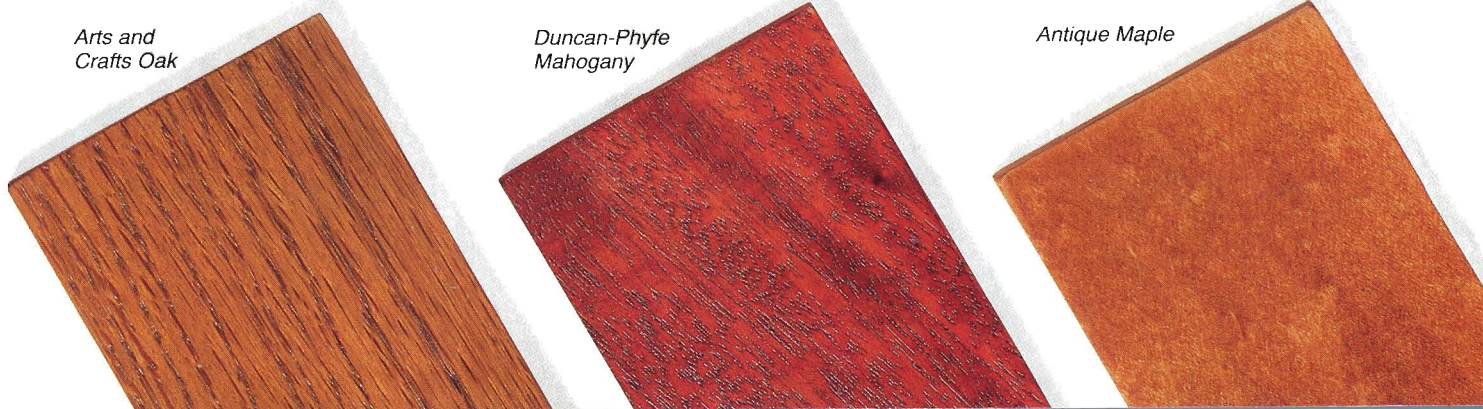
If streaks result or the wood gets too dark, a dye can still be altered. Since dye redissolves in water, even after it has dried, you can remove some of the color by wiping the wood with a damp or wet cloth. You can also change the color by applying another dye right over the original, and then wiping off the excess. With all this flexibility you're bound to have more success matching finishes with water dye stains than you ever did with pigment stains.

Bob Flexner makes and repairs furniture in Norman, Oklahoma, and is the author of Understanding Wood Finishing (Rodale Press, 1-800-848-4735).

Arts and
Crafts Oak

Duncan-Phyfe
Mahogany

Antique Maple



A Barnyard Bonanza

Here's the perfect scrap wood project for a last minute gift.

By Roberta Kolles

Even though the holiday season is close at hand and there are still unchecked names on your gift list, it's not time to panic. For the youngsters on that list I've got a scrap wood project that can be built in a few hours.

A barnyard corral filled with a herd of animals is a great toy, and most of us can remember playing with one when we were young. In fact, the simplicity of these animal silhouettes makes this a wonderful project if your decorating tastes run to country primitives.

Puttin' the Herd Together

All the animal figures are shown on the **full size pattern** insert between pages 12 and 13. If you plan to make more than one figure with each pattern, either make photocopies of the patterns or make templates out of 1/4" hardboard. I prefer templates because they're durable and easy to trace around. Keep in mind that the full size patterns represent adult animals, but these drawings can be reduced easily on a photocopier for animals of different sizes and ages.

The figures can be made out of any 3/4" thick hardwood, although you might consider using Baltic birch plywood for maximum

durability. The plywood layers ensure there won't be weak short grain sections on the figures and, unlike ordinary plywood which has voids in the edges, Baltic birch is solid throughout. Once you've traced the figures, cut them to shape with a band saw and a 1/8" blade or a scroll saw. Glue the tails on the horses and cows to the rear legs of the figures, then sand all the pieces thoroughly to reduce the chance of any splintering.

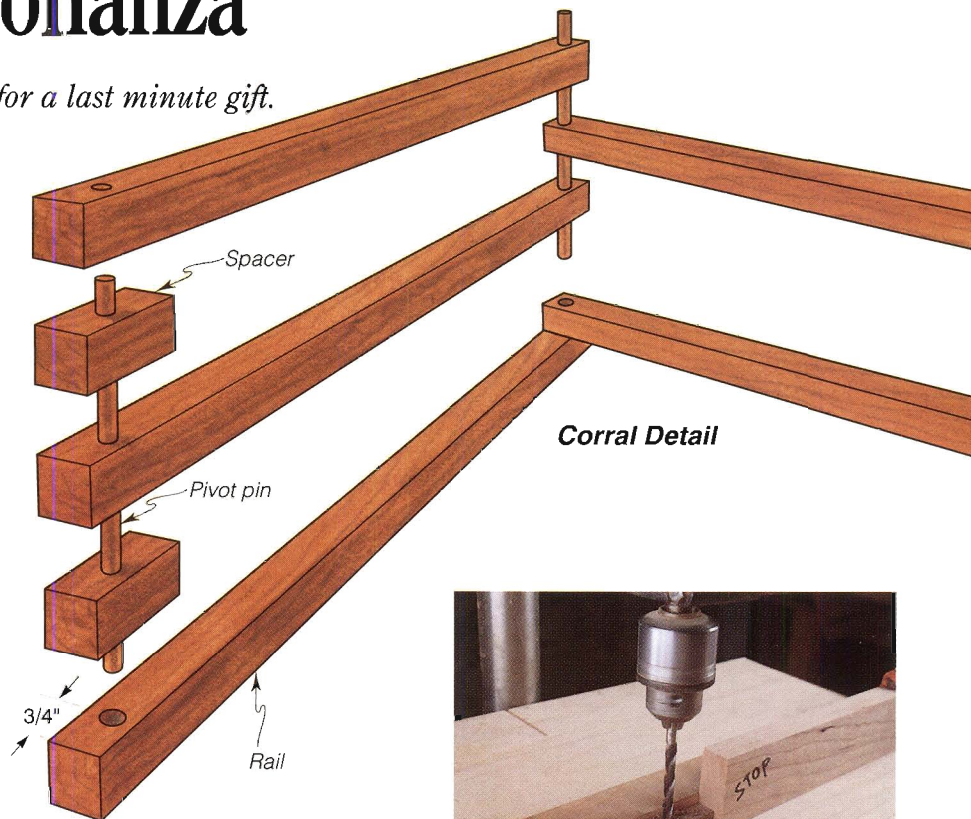
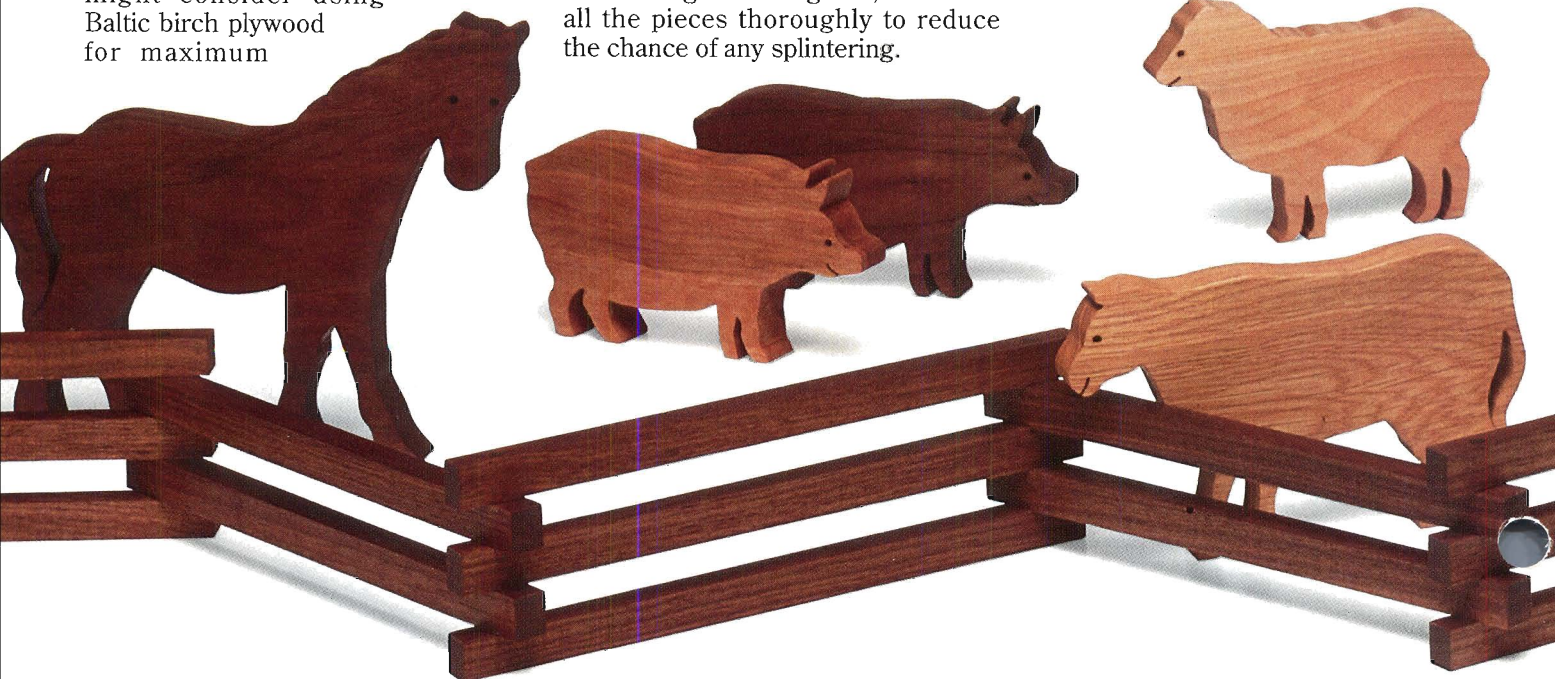


Figure 1: To repeatedly drill all the 1/4" diameter pivot pin holes in the fence rails, set up a fence and stop on your drill press table.

Running Fence

The fence is made up of three basic parts: the rails, the spacers and the pivot pins (see **corral detail** above). Begin making the fence by ripping



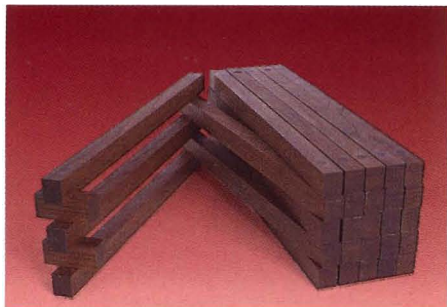


Figure 2: One of the great things about this fence is the way it folds into a compact block. And as a bonus, the spacers can connect the two ends.

1/2" thick hardwood into 1/2" wide strips, then crosscut twenty-eight 10" long pieces for the rails and four 1 1/2" long pieces for the spacers (for a longer fence simply make more rails). My fence has eleven sections and is made of walnut scraps.

Drilling holes in the rails for the 1/4" diameter pins is best done with a drill press—a hand drill might waver, making it difficult to align all the pieces. Clamp a fence to the drill press table to center the rails under the 1/4" bit, and clamp a stop block to the fence to bore the holes 3/4" from the ends of the rails and spacers (See Figure 1).

After cutting twelve 2 5/8" long pieces of dowel you can begin assembling the fence. Put a drop of glue in the top and bottom

rail holes on the fence sections having three rails. All the other rails need to pivot freely on the dowels. Once all the rails and spacers are slipped onto the pins, sand the ends of the pins flush with the outside rails. You'll quickly find out how compact the fence is when folded up, and also discover how useful the spacers are for linking the ends of the fence when it's set up (See Figure 2).

I oiled my fence and animals to give them some protection from little hands. If you want to add more detail to the figures, like hair, hooves and ears, then you can paint them after sealing the wood with varnish.

Perhaps you're more organized than I am when it comes to getting ready for the holidays. If so, I'm envious. But if you're like me and need a last minute kid's gift that won't take much time to build, then try this project. You'll use up a few scraps and make some youngsters very happy.



Friendly Nessie Bookends

With a piece of scrap plywood and a few extra hours in the shop you can build this segmented set of bookends for holding a child's favorite books.

By Dan Jacobson

Has the dinosaur age returned? Given that Barney is the hottest thing on TV and Jurassic Park is the mega hit movie of the year, I'd say dinosaurs are back in a big way. What's even more astonishing is that dinosaur eggs, which look like pet rocks, are being bought by investors for thousands of dollars apiece at auctions. Wow!

Rather than digging up my backyard trying to find a stray egg or two, I got to thinking about building a dinosaur project for my son. I've seen lots of things done with T-rex and the brontosaurus, but I was looking for a somewhat more friendly character. One day the answer occurred to me

—Scotland's famous Loch Ness Monster. The image of Nessie gliding on the water was perfect for a set of bookends.

Building and finishing the Nessie bookends took about five hours. The only special tool I needed was a 1/8" band saw blade for cutting the body to shape, which was made with 3/4" Baltic birch plywood. The base is solid birch, and I used both 3/8" and 3/4" diameter birch wood buttons for the details on the figure. For the green stain I mixed a batch of water based aniline dye.

Out to the Shop

The first thing to do is cut out the **full size pattern** of Nessie (between pages 12 and 13) and mount it onto your plywood with spray adhesive. Mark the center of each button location with an awl, then bandsaw the plywood to shape (**See Figure 1**).

Once Nessie is cut out, drill all the 3/4" and 3/8" holes for the wood buttons (**See Figure 2**). Forstner bits work the best, but brad points are fine if they're all you have. Drill the holes through the plywood (since you'll mount buttons on both sides of the

Our faithful reproduction of the Loch Ness Monster, based on actual photographs and eyewitness sightings, will send the rest of the animal kingdom running for cover.

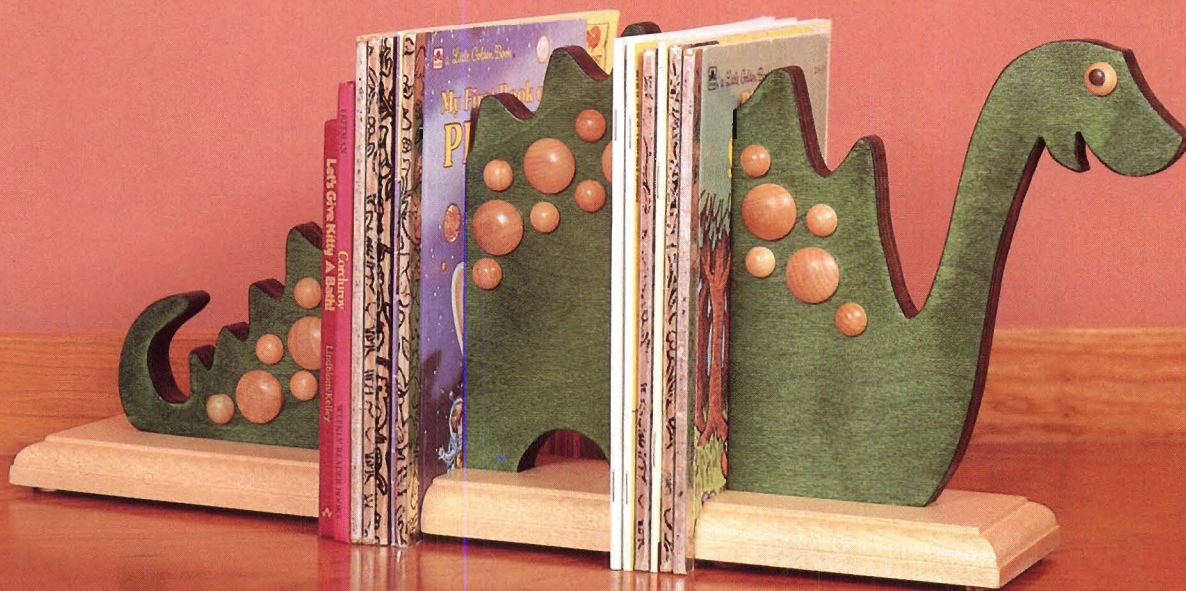


figure), and be sure to use a back-up board to prevent tear out on the exit side of the stock.

Smooth the plywood edges with a drum sander (See Figure 3) and a V-shaped sanding block (See Figure 4). You may be tempted to file these gaps, but you're more likely to chip the fragile outside layer of the plywood if you do.

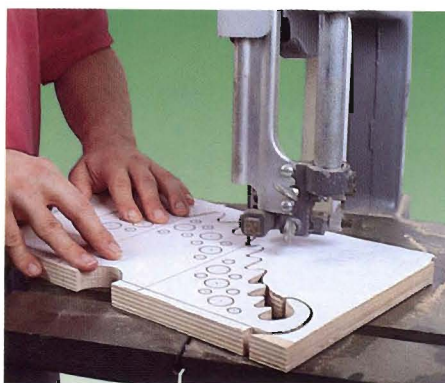
Cut the base to size and rout its edges with a decorative bit, like the beading bit I used, as shown in the **edge detail**. Next, layout the grooves in the base as shown in the **base detail** at right, and compare this layout to the bottom edge of your own Nessie to make sure they match. Rout the grooves using a plunge router, a straight edge guide and a 3/4" straight bit, then square the ends of each groove with a chisel.

As you can see from the **exploded view**, Nessie and the base are cut into thirds. Follow the lines on the pattern to first cut Nessie apart on the table saw, then use these three pieces to mark the cut lines on the base. Cut the base apart, then fit the Nessie sections into their base pieces to make sure they fit together properly. Once you're happy with the fit, sand the fresh edges on all the pieces.

Mix the aniline dye with hot distilled water and sponge it onto the three parts of the plywood figure (see *Finishing Thoughts* on page 19 for more information on aniline dye). Be sure to wear latex gloves or your hands will remain green for a week. Allow the dye stain to completely dry, then sand the figure very lightly with 360 grit paper.

Use a toothpick to spread glue in the button holes, then tap the buttons into position with a rubber mallet. Let the glue dry awhile, then drill a 1/4" diameter hole in the center of each eye button and glue in small pieces of 1/4" walnut dowel for the pupils, as shown in the **eye detail**. Sand the walnut flush with the eye buttons and glue the three sections of Nessie to the base pieces.

To complete the project spray on three coats of Deft Clear Wood Finish and add Blum hinge bumpers to the underside of the base—they keep the bookends from slipping once they're in use. Now that your Nessie is finished, I have to tell you a secret: the smiles this project inspires from kids will be a lot more plentiful than the dollars you'll see from egg investing.



Step 1: After gluing the full size pattern to the plywood with spray mount adhesive, bandsaw Nessie to shape using a 1/8" blade.



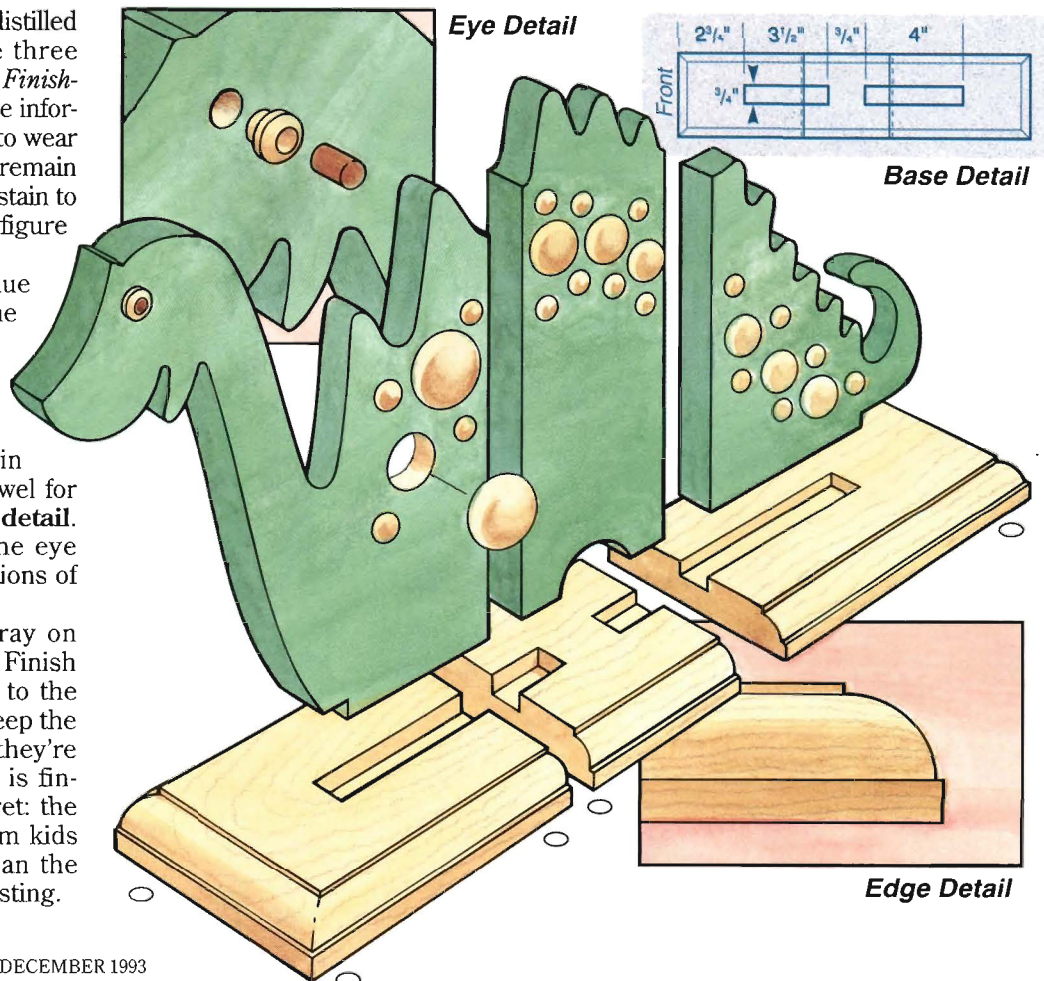
Step 2: Drill all the button holes completely through the figure, making sure to back up the plywood with a scrap piece to prevent tear out.



Step 3: Secure Nessie in a vise while you sand the bandsawn edges with a 1/2" diameter drum sander chucked in a portable drill.

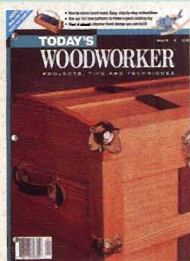


Step 4: Make a V-shaped sanding block out of 1/2" stock for getting into the tight spots in the gaps along Nessie's back.



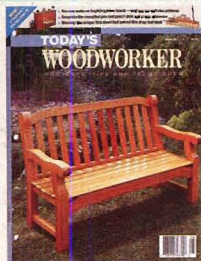
FREE binder when you order six back issues or more!

29



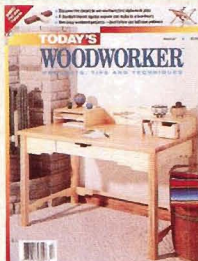
A steamer trunk, a toddler's rocking fish, a bentwood carryall and a marking gauge.
Item 89004\$3.95

28



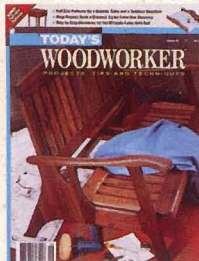
An English garden bench, a fold down bed, a whirligig and a desk top accessory set.
Item 88999\$3.95

27



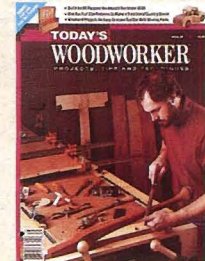
A southwestern desk, a folding magazine rack, a dovetail layout tool and two more projects.
Item 88981\$3.95

26



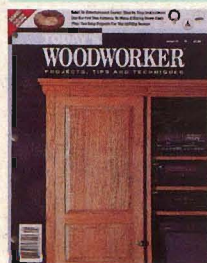
The ultimate futon sofa bed, a crosscut jig, a cherry side table and a tambour breadbox.
Item 88973\$3.95

25



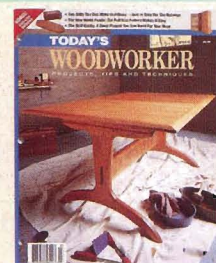
The budget workbench, a toy car, the flammable storage cabinet and a traditional country settle.
Item 88965\$3.95

24



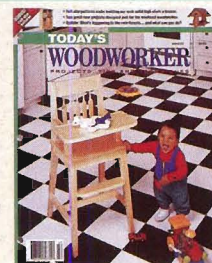
Entertainment center, dining chair (for table in issue 23), serving tray and tree ornaments.
Item 79707\$3.95

23



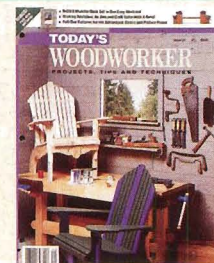
Contemporary dining room table, drill bit cabinet and three weekend gift projects.
Item 79699\$3.95

22



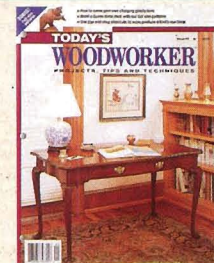
Classic tavern mirror, a high chair for the ages, display case and a weekend bird feeder.
Item 79681\$3.95

21



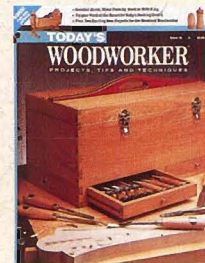
Adirondack Chair, easy to make deck set, scroll saw project and a sofa table.
Item 79673\$3.95

20



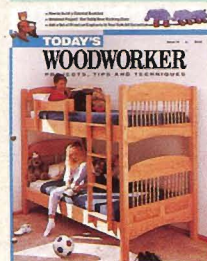
A Queen Anne desk with cabriole legs, carved grizzly bear and a table lamp.
Item 79665\$3.95

19



Craftsman's toolbox, a swinging cradle, turned salt and pepper shakers and a simple bookcase.
Item 79582\$3.95

18



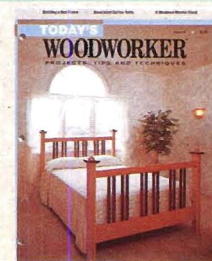
A sturdy bunk bed, crafting folk elephants, a Teddy Bear chair and a Shaker table.
Item 72199\$3.95

17



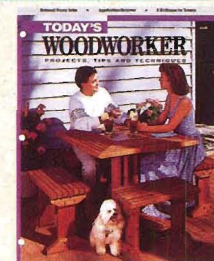
Country TV cabinet, an elegant bureau caddy, the angler's mobile and a toddler's tractor.
Item 72161\$3.95

16



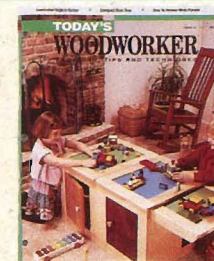
Crafting a maple bed frame, a contemporary mantel clock and a dovetailed coffee table.
Item 71639\$3.95

15



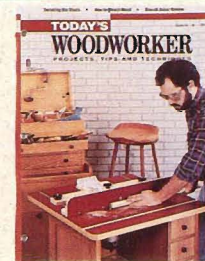
Picnic table for four, a birdhouse for turners, a simple dulcimer and a joiner's mallet.
Item 66878\$3.95

14



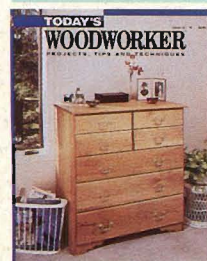
A craftsman style rocking chair, brightly colored toybox and a compact disc holder.
Item 66860\$3.95

13



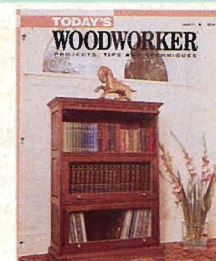
Precision router table, a swiveling bar stool and tips on buying a new biscuit joiner.
Item 68700\$3.95

12



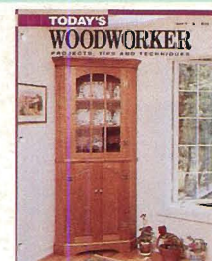
Butternut bureau, a Shaker swivel mirror and deep-reach hand screw clamps.
Item 38521\$3.95

11



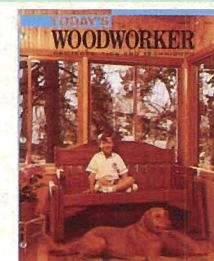
Barrister's bookcase, spinning string tops, a kid's step stool and an easy to make desk tray.
Item 38513\$3.95

10



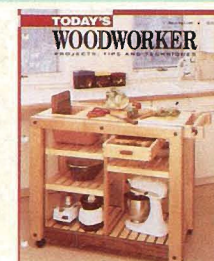
Classic corner cabinet, bent lamination fishing net and a white oak trivet scrollsaw project.
Item 38505\$3.95

9



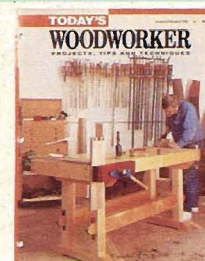
A porch glider for two, continuous grain box, Chippendale mirror and spoon carving tips.
Item 38497\$3.95

8



Kitchen work station, Shaker candlestand table, baker's rolling pin and a step stool.
Item 38489\$3.95

7



European workbench, turned stamp holders, bandsawn heart box and a breakfast tray.
38471\$3.95

Binders

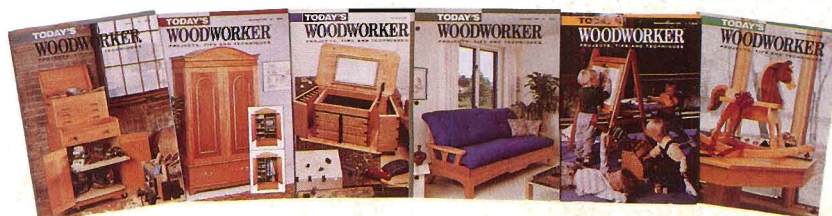
60962\$7.95
(2+ - \$6.95 each)

Stoneware Mugs
88329\$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.



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.

Drill 1/8" hole
through stock
for eyes

Pig



Crib



Rush Stool

Barnyard Bonanza



**Little
Nessie**

*Full size pattern
includes all
shaped pieces*

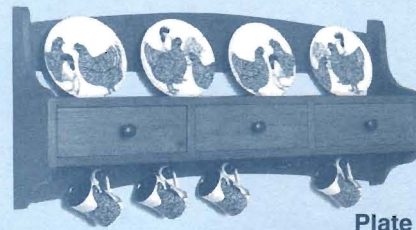
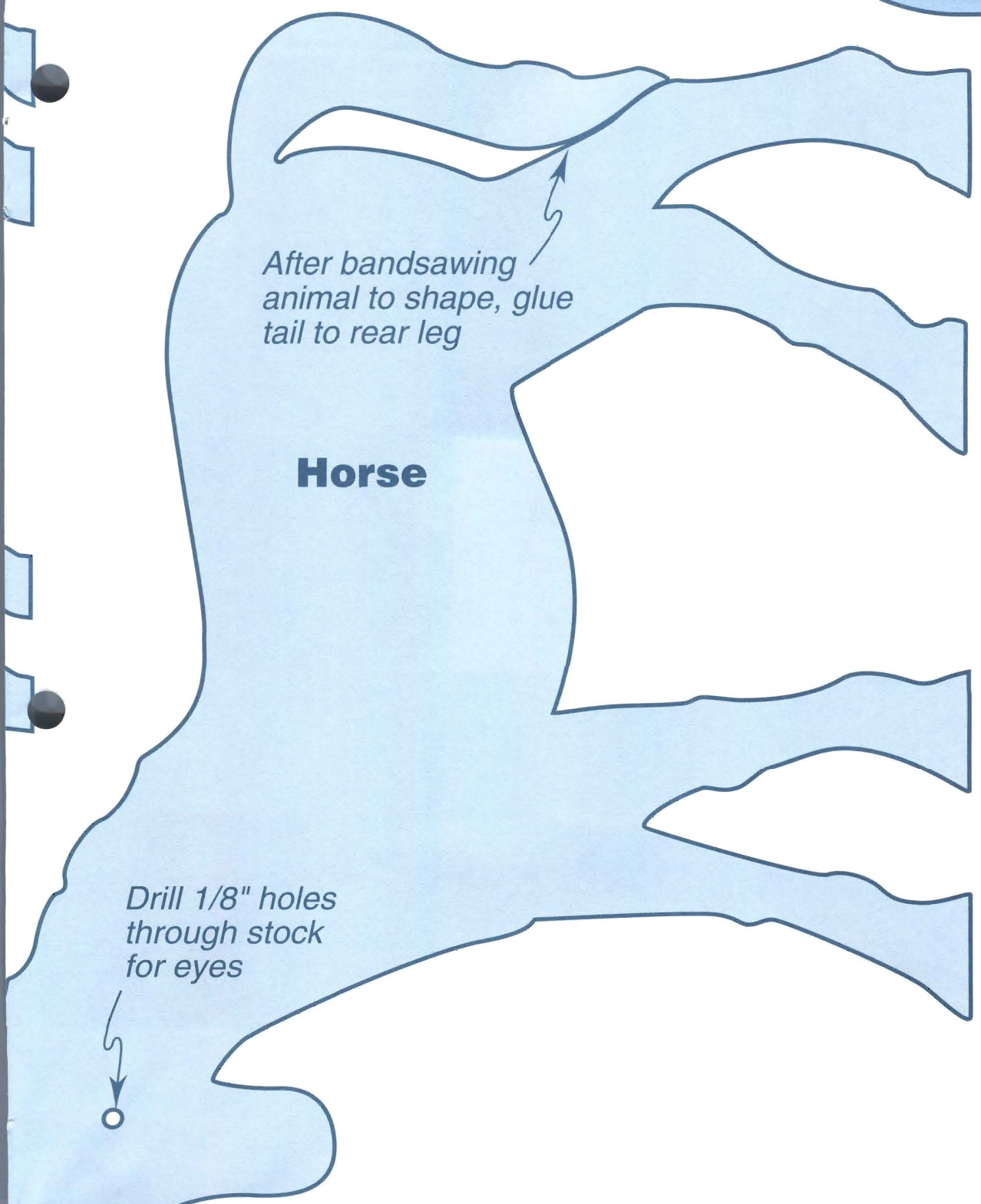


Plate Rack

**TODAY'S
WOODWORKER™**

Today's Woodworker, Box 44, Rogers MN 55374.

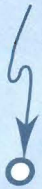
© 1993, Today's Woodworker Magazine



*After bandsawing
animal to shape, glue
tail to rear leg*

Horse

*Drill 1/8" holes
through stock
for eyes*



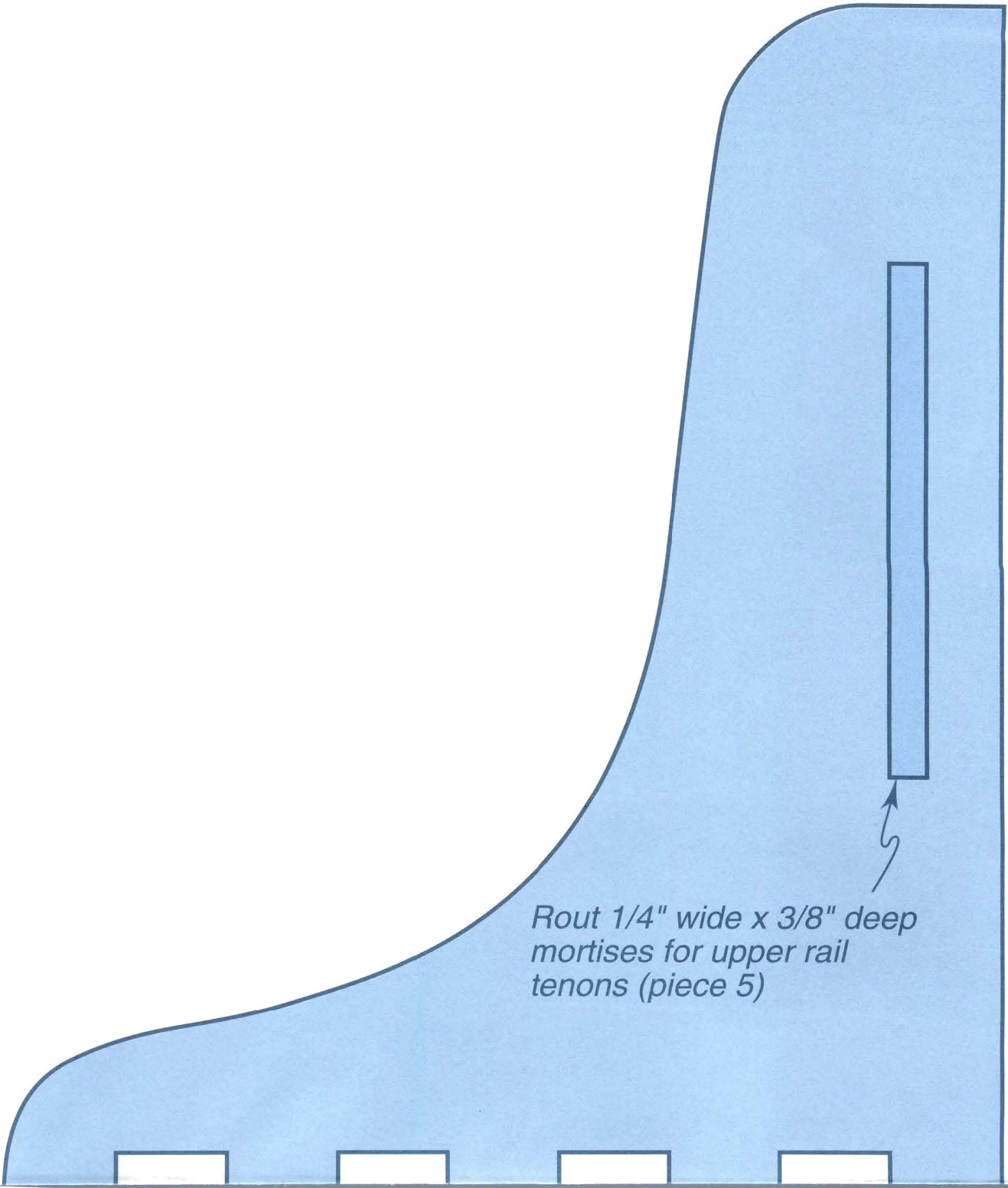
1

Plate Rack Side

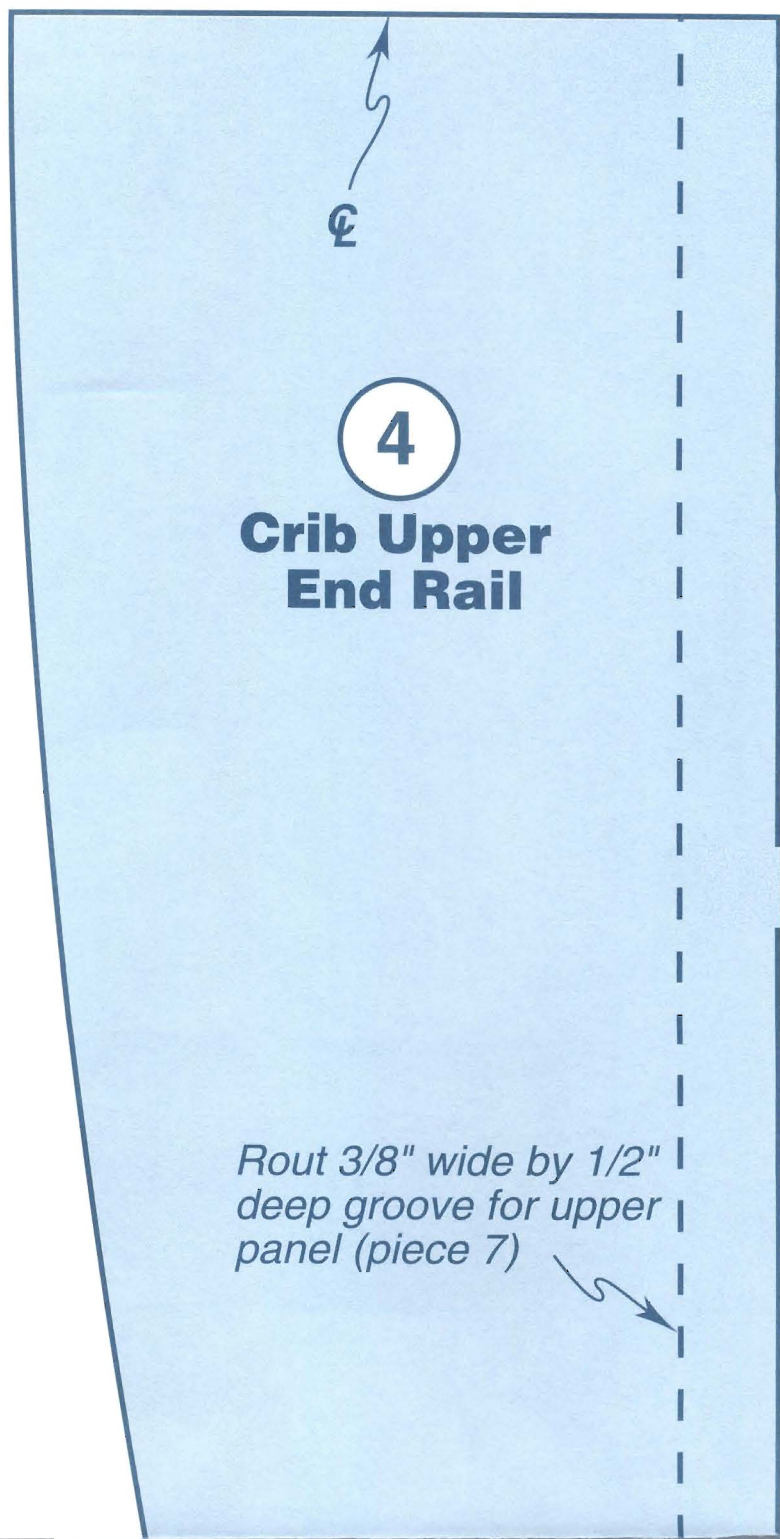
Be sure to layout these through mortises on both sides of stock

Rout 1/4" wide x 3/8" deep mortises for lower rail tenon (piece 6)





*Rout 1/4" wide x 3/8" deep
mortises for upper rail
tenons (piece 5)*



Crib Long Slat

*Rout edges
with 1/4"
radius
roundover bit
after forming
slat*

ortise
r side
retcher
non

7
ool
eg
(View)

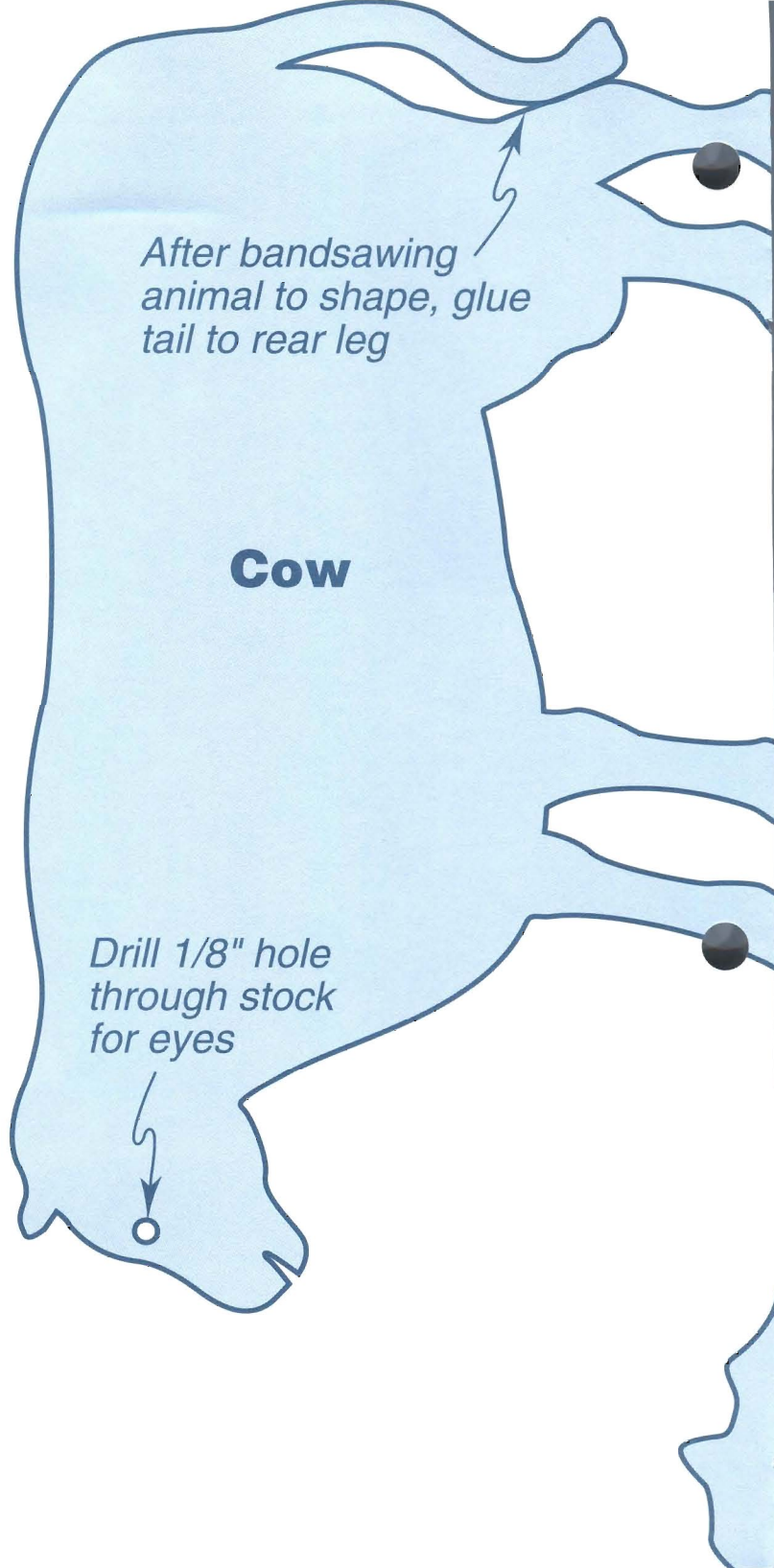
2

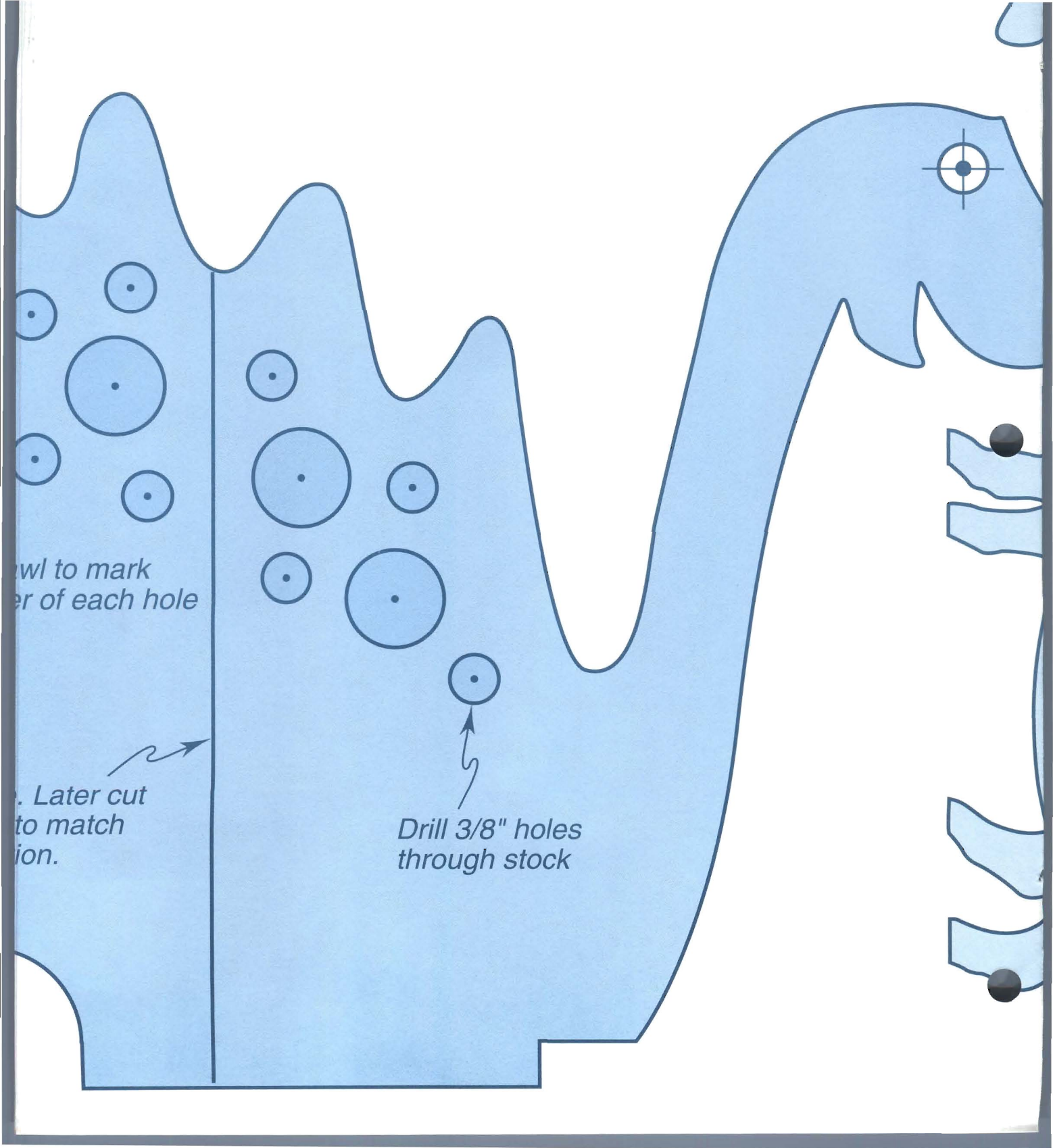
Crib Slat

↑
7/16"
x 1/2"
tenons
ends
making

*Rout 7/16"
dia. x 1/2"
long tenons
on ends
after making
slats*

*Use pattern to
make slat
templates out
of 1/4" plywood*

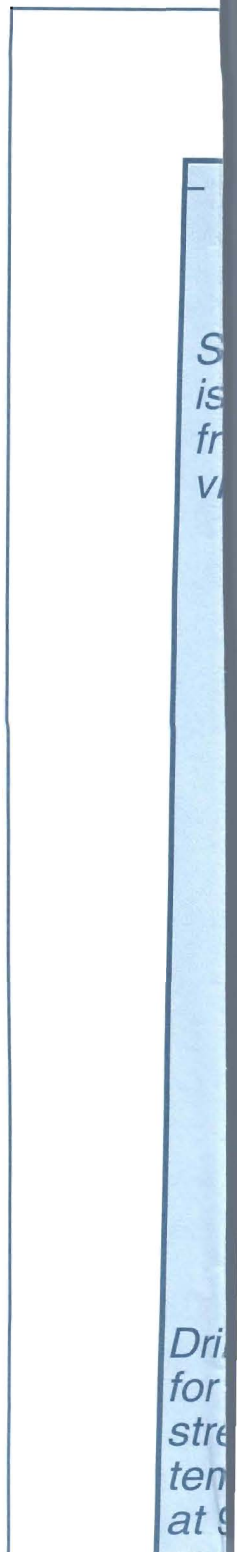
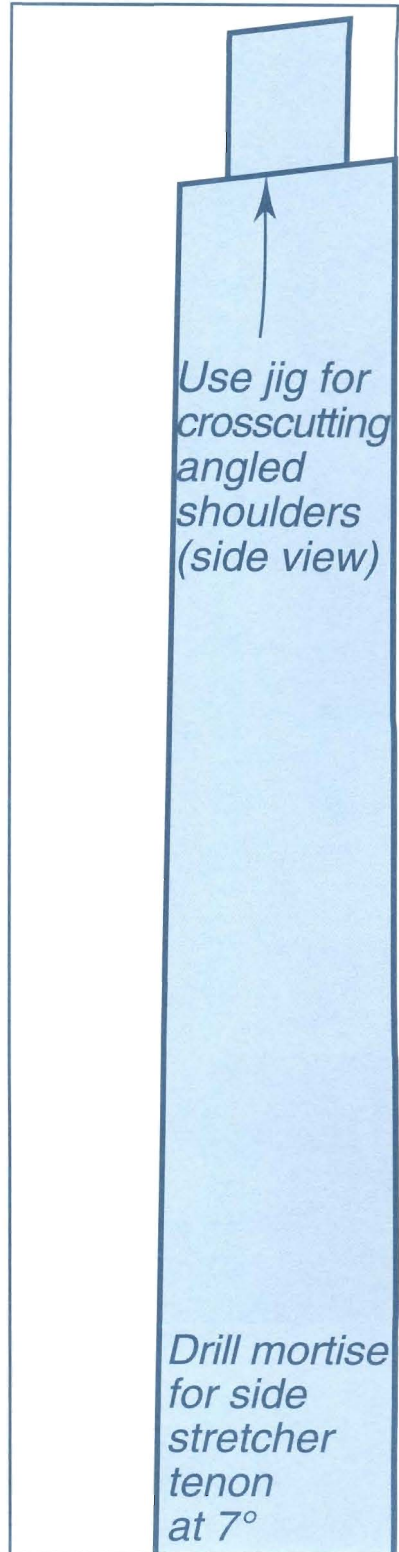
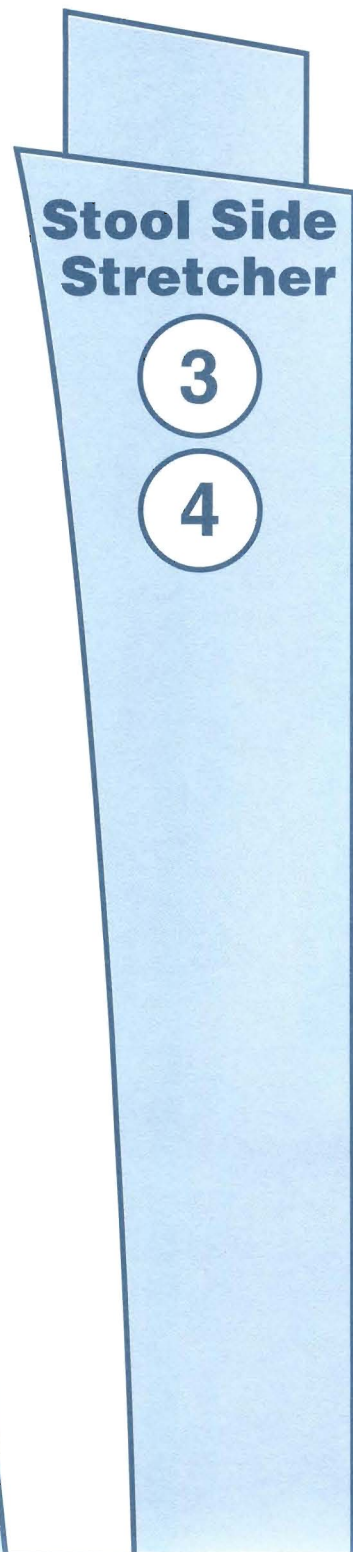
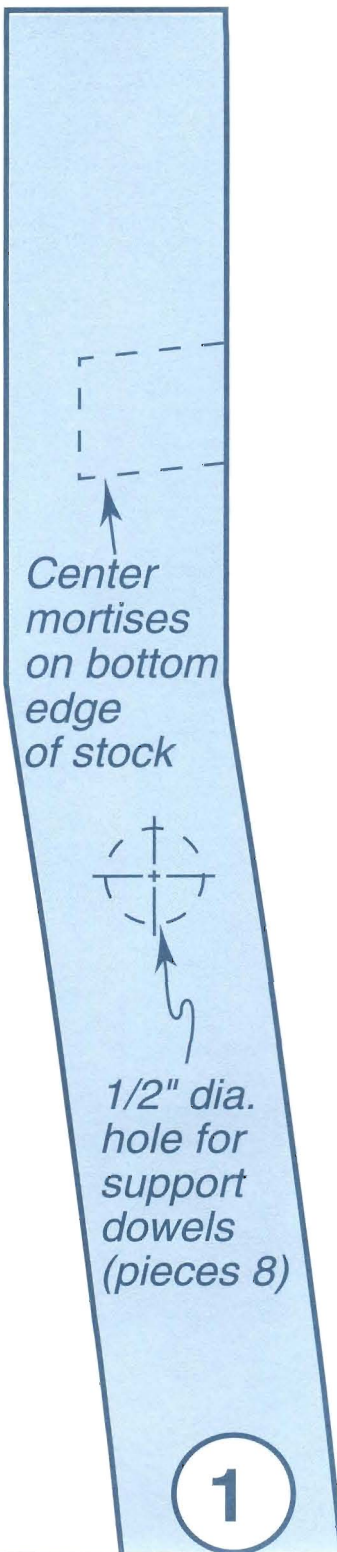




awl to mark
center of each hole

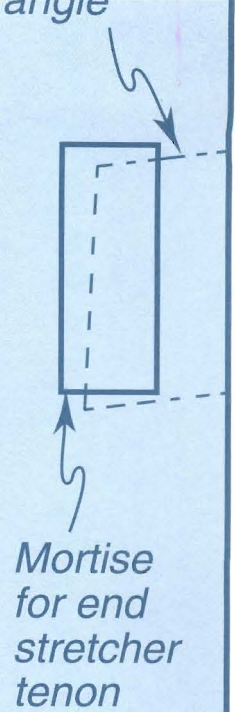
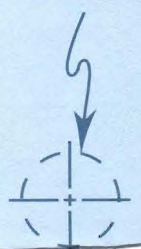
Later cut
to match
portion.

Drill $\frac{3}{8}$ " holes
through stock



2
Stool Rail

1/2" dia.
hole for
support
dowels
(pieces 8)



7
Stool Leg
(Side View)



Cut 90°
shoulders

5

6

Use jig for
crosscutting
angled
shoulders



Drill mortise waste
at 7° angle

Do not bandsaw rails
to shape until all
joinery is completed

Cut 90°
shoulders

C
Shor

Rout
dia. x
long
on e
after
slats

Sheep

*Drill 1/8" hole
through stock
for eyes*

*Use an a
the cent*

*Cut Nessie here
base into thirds
each figure sec*

*Drill 3/4" holes
through stock*

